ON-LOCATION ELECTRONICS TROUBLESHOOTING SERVICES SYSTEM

CROSS-REFERENCES TO RELATED APPLICATIONS

The present application claims priority from and is related to applicant's prior U.S. Provisional Application Serial No. 60/439,998, filed January 13, 2003, entitled "On-Location Electronics Troubleshooting Services System", and claims priority from and is related to U.S. Provisional Application Serial No. 60/484,298, filed August 11, 2003, entitled "On-Location Electronics Troubleshooting Services System", the contents of all of which are hereby herein incorporated by reference and are not admitted to be prior art with respect to the present invention by their mention in this cross-reference section.

BACKGROUND

This invention relates to a system for providing on-location electronics troubleshooting services to consumers and businesses in a manner that improves timeliness and quality of responses to requests for assistance. This system is made possible by the widespread availability of the Internet and improvements in related software.

In the past few years, the pace of change in low voltage electronics has accelerated and is likely to continue into the future. Low voltage electronics, typified by personal computers, also includes video and stereo equipment and all manner of devices from telephones to personal digital assistants. Not only

has the number of devices increased, but their complexity has increased to the point where many are no longer installable without significant assistance from retailers and manufacturers. The increase in the number and complexity of low-voltage devices has made it increasingly difficult to troubleshoot problems when they inevitably arise. Recent economic troubles have forced many low-voltage manufacturers and dealers to reduce live telephone-based customer support as well in favor or email exchanges, FAQ (Frequently Asked Questions) lists or user forums. Even when support is available, it is often of marginal quality due to the low skill level of telephone support representatives and it has inherent limitations of time of day and the ability of the two parties to communicate clearly about a problem. Email exchanges and user forums are often time-consuming and require more knowledge than the user has and usually require multiple days to receive an answer, which answer has a high likelihood of being incorrect. FAQ lists can be helpful, but are usually limited to addressing only the most basic issues.

Today, beyond telephone support, the sources of assistance for consumers and small businesses are typically limited to: on-location assistance provided on an on-call basis; or technically oriented friends or family. And using either of these alternatives often means delays in getting a problem resolved in a timely manner. On-location full time technical support staff,

which would theoretically be more responsive, is never an option for consumers; and most small businesses are unable to afford the cost. Additionally, telephone-based support is less and less often provided at no charge.

All the current alternatives are generally only available during business hours on business days; therefore, no help is available on nights and weekends. Consumers and small businesses are often forced to "live with a problem" for much longer than they would like or to pay a premium for on-location help on a one-time basis.

Additionally, most problems encountered are not intrinsic failures of a device, but are grounded in misunderstandings, user ignorance, and errors by users during installation or set up. This means that most consumers' and small businesses' low-voltage technical problems can be resolved quickly by a technically competent person working at the consumer's or business's location.

Furthermore, the problems faced by low-voltage devices manufacturers are common to a wide variety of other industries and service providers. Examples of other areas which face similar problems are services providers such as telephone companies, hotels, and information technology departments in large organizations and other service providers such as telephone and cable companies.

Coincident with these changes in low-voltage devices, a wide range of interactive devices have been developed to provide information to a variety of users via communications networks. These interactive devices include, for example, computers connected to various computer on-line services, interactive kiosks, interactive television systems, and a variety of other wired and wireless devices, such as personal data assistants (PDA's) and the like. In particular, the popularity of computer on-line services has grown immensely in popularity over the last decade. Computer on-line services are provided by a wide variety of different companies.

In general, most computer on-line services are accessed via the Internet. The Internet is a global network of computers. One popular part of the Internet is the World Wide Web, or the "Web." The World Wide Web contains computers that display graphical and textual information. Computers that provide information on the World Wide Web are typically called "Websites." A Website is defined by an Internet address that has an associated electronic page, often called a "homepage." Generally, a homepage is an electronic document that organizes the presentation of text, graphical images, audio and video into a desired display. These Websites are operated by a wide variety of entities, which are typically called "providers".

A user may access the Internet via a dedicated high-speed

line or by using a personal computer (PC) equipped with a conventional modem or a variety of other wired and wireless devices. Special interface software, called "browser" software, is installed within the PC or other access device. When the user wishes to access the Internet by normal telephone line, an attached modem is automatically instructed to dial the telephone number associated with the local Internet host server. The user can then access information at any address accessible over the Internet. Two well-known web browsers, for example, are the Netscape Navigator browser marketed by Netscape Communications Corporation and the Internet Explorer browser marketed by Microsoft Corporation.

Information exchanged over the Internet is typically encoded in HyperText Mark-up Language (HTML) format. The HTML format is a scripting language that is used to generate the homepages for different content providers. In this setting, a content provider is an individual or company that places information (content) on the Internet so that others can access it. As is well known in the art, the HTML format is a set of conventions for marking different portions of a document so that each portion appears in a distinctive format. For example, the HTML format identifies or "tags" portions of a document to identify different categories of text (e.g., the title, header, body text, etc.). When a web browser (or suitable executable program) accesses an HTML

document, the web browser (or suitable executable program) reads the embedded tags in the document so it appears formatted in the specified manner.

An HTML document can also include hyperlinks, which allow a user to move from one document to another document on the Internet. A hyperlink is an underlined or otherwise emphasized portion of text that, when selected using an input device such as a mouse, activates a software connection module that allows the user to jump between documents or pages (i.e., within the same Website or to other Websites). Hyperlinks are well known in the art, and have been sometimes referred to as anchors. The act of selecting the hyperlink is often referred to as "clicking on" the hyperlink.

The advent and subsequent increased use of the Internet and its interconnected communications systems, coupled with new wireless technologies, may provide an opportunity for the development of new and advanced methods of providing skilled, timely on-location electronics troubleshooting services at a reasonable cost to the customer.

Additionally, a variety of other industries which provide some form of on-site service and support are also faced with problems and requirements are similar to those faced by the low-voltage electronics industry.

For example, hotels often have difficulty managing requests

for deliveries to guest's rooms. Frequently guests request delivery of toiletries, food, etc., be to their room. Today, the requestor (person or people) must call the front desk. Typically, person the front desk must in turn request that someone else deliver the requested items. This process presents a number of problems including no consistent way to track requests and deliveries of those items, difficulty in monitoring performance and completion, the involvement of several people and no tracking of the frequency of requests by the type of request, deliveries, repairs, etc.

Another example, many companies use call centers (not always in the US) to provide customer support. At best these can be frustrating and time consuming experiences for customers because it is frequently difficult to find the right person to help resolve the problem. This leads to unhappy customers and the need to maintain large call centers with their attendant expense.

A further example, information technology departments for many companies manage and process thousands of requests for help and service. Frequently, this support effort suffers from communications methods that ensure the highest priority problems are addressed first. Additionally, while voice mail and other forms of communication permit leaving a message with a person they do not permit centralized management including prioritization and assignment of the requests. Thus, problems

are not resolved on timely basis and the support staff must each

deal with conflicting priorities and frequent changes in work.

A final example, high rise building managers must deal with

a constant flow of incoming service requests by tenants to the

building manager. The building manager must then request the

services of a trade contractor to address the problem. Finally

the building manager must then follow up to ensure the problem is

resolved. All this is typically very disjointed requiring many

phone calls and time and effort for many people which results in

improper work, late completions and unhappy tenants and trades

contractors.

This opportunity is also applicable to a variety of other

industries which provide some form of on-site service and support

because their problems and requirements are similar to those

faced by the low-voltage electronics industry. Such new and

advanced methods (such as the inventions provided herein by

applicant) of providing on-location support solve many of the

current problems outlined above.

OBJECTS OF THE INVENTION

A primary object and feature of the present invention is

provide a solution to these above-mentioned problems of the prior

art by presenting a new and effective system for on-location

electronics troubleshooting and similar services, typically

available essentially 24 hours per day 365 days per year using

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skilled technicians – a new approach to troubleshooting by thinking "out of the box".

It is a further object and feature of the present invention to provide a system for managing customer communications of needs (whether involving repair or troubleshooting) and automatically dispatching technicians, with little or no human involvement, to the customers' locations based on a request from a respective customer.

It is a further object and feature of the present invention to provide a system which assists in the management of technicians and their work shift schedules with minimal supervisory involvement. It is still another object and feature of such a system to assist in recording completion of customers' troubleshooting requests and their satisfaction with the technician's work.

A further primary object and feature of the present invention is to provide such a system to permit customers to pay for the services in a variety of ways, including paying a monthly fee not directly related to the number of troubleshooting requests, paying a fee for each service request, or other combinations. It is another object and feature of the present invention to link with selected electronics suppliers to permit customers to purchase products for delivery at any time of day on any day. Further, it is another object and feature of the

present invention to permit customers to request on-location repairs from qualified electronics repair companies.

It is yet another primary object and feature of the present invention to utilize the capabilities of the Internet-based on-location services management software to implement key functions and features of the invention. It is a further primary object and feature of the present invention to interface voice technology and the Internet-based on-location services management software to provide alternate methods of utilizing the invention. It is still another object and feature of the present invention to interface various wireless technologies with the Internet-based on-location services management software to implement key functions and features of the invention.

A further primary object and feature of the present invention is to provide such a system that is efficient, inexpensive, and handy. Other objects and features of this invention will become apparent with reference to the following descriptions.

SUMMARY OF THE INVENTION

In accordance with a preferred embodiment hereof, this invention provides an Internet-website-client-server-assisted system, relating to providing on-location electronics troubleshooting services, comprising the steps of: registering customer information relating to at least one customer;

registering technician information relating to at least one technician having electronics-technician abilities relating to providing such on-location electronics troubleshooting services; maintaining a database, on at least one Internet website client server, of such customer information relating to such at least one customer; maintaining a database, on such at least one Internet website client server, of such technician information relating to such at least one technician; collecting automatically, using such at least one Internet website client server, at least one fee from such at least one customer relating to such on-location electronics troubleshooting services; . receiving, on such at least one Internet website client server, requests relating to such on-location electronics troubleshooting services from such at least one customer; notifying automatically, using such at least one Internet website client server, such at least one technician to provide such on-location electronics troubleshooting services requested by such at least one customer; receiving on-location electronics troubleshooting service information, on at least one Internet website client server, from such at least one technician; and maintaining a database, on such at least one Internet website client server, of such on-location electronics troubleshooting service information.

Moreover, it provides such an Internet-website-client-server-assisted system wherein such at least one customer and

such at least one technician are sufficiently co-located within geographical areas to provide appropriate response times. Additionally, it provides such an Internet-website-client-server-assisted system, wherein such step of receiving on-location electronics troubleshooting service information by such at least one technician comprises the steps of: receiving start time of such on-location electronics troubleshooting service, on such at least one Internet website client server, from selected such at least one technician; receiving end time of such on-location electronics troubleshooting services, on such at least one Internet website client server, from selected such at least one technician; storing such start time of such on-location electronics troubleshooting service on such at least one Internet website client server; and storing such end time of such on-location electronics troubleshooting service on such at least one Internet website client server. Also, it provides such an Internet-website-client-server-assisted system further comprising the steps of: receiving indication of any need relating to repair service, on such at least one Internet website client server, from such selected at least one technician; receiving indication of selected type of such repair service, on such at least one Internet website client server, from such selected at least one technician; storing such indication of any need relating to repair service on such at least one Internet website client

server; storing such selected type of such repair service, on such at least one Internet website client server; selecting such at least one repair service of such selected type of repair service; and notifying such selected at least one repair service to contact such at least one customer.

In addition, it provides such an Internet-website-client-server-assisted system further comprising the steps of: receiving customer satisfaction evaluation from such selected at least one technician; and storing such customer satisfaction evaluation. And, it provides such an Internet-website-client-server-assisted system, wherein such step of collecting automatically, using such at least one Internet website client server, at least one fee from such at least one customer relating to such on-location electronics troubleshooting services comprises the steps of: agreeing to at least one payment of a specified amount by such at least one customer; and receiving such at least one payment. Further, it provides such an Internet-website-client-server-assisted system, wherein such step of receiving such at least one payment comprises the steps of; providing of credit card account information by such at least one customer; storing such at least one credit card account information, on at least one Internet website client server, relating to such at least one customer; authorizing at least one charge to such credit card account of such at least one customer; storing such authorization of at

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least one charge to such credit card account, on at least one
Internet website client server, of such at least one customer;
requesting at least one payment from such at least one credit
card account on behalf of such at least one customer; and
recording such at least one payment, on at least one Internet
website client server, on behalf of such at least one customer.

Even further, it provides such an Internet-website-client-
server-assisted system, wherein such step of requesting at least
one payment from such at least one credit card account on behalf
of such at least one customer comprises the step of requesting
such at least one payment from such at least one credit card
account on behalf of such at least one customer substantially
automatically at pre-determined intervals. Moreover, it provides
such an Internet-website-client-server-assisted system, wherein
such step of requesting at least one payment from such at least
one credit card account on behalf of such at least one customer
comprises the step of requesting such at least one payment from
such at least one credit card account on behalf of such at least
one customer at completion of on-location electronics
troubleshooting services by such at least one technician.
Additionally, it provides such an Internet-website-client-server-
assisted system further comprising the steps of: notifying such
at least one customer requesting such on-location electronics
troubleshooting services of estimated time of arrival of notified

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such at least one technician; and providing such on-location electronics troubleshooting services to such at least one customer. Also, it provides such an Internet-website-client-server-assisted system wherein such step of notifying such at least one customer requesting such on-location electronics troubleshooting services of estimated time of arrival of notified such at least one technician comprises the steps of: providing to such at least one customer such estimated time of arrival by such notified such at least one technician; and recording such estimated time of arrival provided by such notified such at least one technician.

In addition, it provides such an Internet-website-client-server-assisted system further comprising the steps of: providing such on-location electronics troubleshooting services to such at least one customer at any time of day; and providing such on-location electronics troubleshooting services to such at least one customer on any day. And, it provides such an Internet-website-client-server-assisted system, wherein such step of registering customer information relating to at least one customer further comprises the steps of: recruiting such at least one customer; obtaining agreement from such at least one customer to pay for such on-location electronics troubleshooting services; recording such customer information, on at least one Internet website client server, relating to such at least one customer;

wherein such customer information comprises service location address; at least one contact name; at least one contact telephone number; and assigning such service location address to at least one geographic dispatch area. Further, it provides such an Internet-website-client-server-assisted system, wherein such customer information further comprises: customer name; customer billing address; customer email address; customer credit card number; and customer credit card number expiration date. Even further, it provides such an Internet-website-client-server-assisted system further comprising the steps of: providing on-location assistance relating to implementation of such on-site customer interface module of such Internet-website-client-server-assisted system to such at least one customer; and providing on-location usage training relating to such on-site customer interface module of such Internet-website-client-server-assisted system to such at least one customer.

Moreover, it provides such an Internet-website-client-server-assisted system, wherein such step of registering technician information relating to at least one technician having electronics-technician abilities relating to providing such on-location electronics troubleshooting services comprises the steps of: establishing a plurality of qualification criteria relating to selecting such at least one technician; wherein such qualification criteria comprise geographic location of residence

of such at least one technician, and required minimum competency levels relating to electronics-technician abilities; and recruiting such at least one technician; and recording technician information, on at least one Internet website client server, relating to selected such at least one technician; wherein such technician information comprises technician name, technician home address, technician home telephone number, technician email address, and technician electronics-technician skills; selecting such at least one technicians using such plurality of qualification criteria; assigning such selected at least one technician a unique identification number; assigning such technician home address to at least one geographic dispatch area; and implementing at least one technician user interface module of such Internet-website-client-server-assisted system. Additionally, it provides such an Internet-website-client-server-assisted system, wherein such technician information further comprises: technician cellular phone number; and technician pager number.

Also, it provides such an Internet-website-client-server-assisted system wherein such step of receiving, on such at least one Internet website client server, requests relating to such on-location electronics troubleshooting services from such at least one customer comprises the steps of: inputting of login identification information, on such at least one Internet website

client server, from such at least one customer; validating login
identification information from such at least one customer;
receiving confirmation of accuracy, on such at least one Internet
website client server, of such customer information; receiving
contact information, on such at least one Internet website client
server, relating to such current at least one on-location
electronics troubleshooting request; submitting of at least one
problem description relating to such current at least one on-
location electronics troubleshooting request by such at least one
customer; and receiving of such at least one problem description
relating to such current at least one on-location electronics
troubleshooting request, on such at least one Internet website
client server, from such at least one customer.

In addition, it provides such an Internet-website-client-
server-assisted system, wherein such step of notifying
automatically, using such at least one Internet website client
server, such at least one technician to provide such on-location
electronics troubleshooting services requested by such at least
one customer comprises the steps of: selecting such at least one
technician using dispatch selection criteria; wherein such
dispatch selection criteria comprises identifying at least one of
such at least one technician assigned to such same geographic
dispatch area as such service location of such at least one
customer requesting on-location electronics troubleshooting

services, and identifying at least one such technician having greatest elapsed time since such last notification; and notifying such at least one technician to provide such on-location electronics troubleshooting services requested by such at least one customer; and recording time of such notification, on such at least one Internet website client server, of such at least one technician. And, it provides such an Internet-website-client-server-assisted system further comprising the steps of: receiving at least one work shift start request, on such at least one Internet website client server, from such at least one technician; storing time of day and date of receipt of such work shift start request, on such at least one Internet website client server, from such at least one technician; sending confirmation of start of work shift to such at least one technician; receiving at least one end of work shift request, on such at least one Internet website client server, from such at least one technician; storing time of day and date of receipt of such at least one end of work shift request, on such at least one Internet website client server, from such at least one technician; and sending confirmation of end of work shift to such at least one technician.

Further, it provides such an Internet-website-client-server-assisted system further comprising the step of presenting planned shift scheduling to such at least one technician. Even further,

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it provides such an Internet-website-client-server-assisted system further comprising the steps of: preparing text-based reports; and preparing graphical reports.

In accordance with another preferred embodiment hereof, this invention provides an Internet website client-server computer system relating to providing on-location electronics troubleshooting services comprising, in combination: computer interface and storage means for registering customer data relating to at least one customer; computer interface and storage means for registering technician data relating to at least one technician having electronics-technician abilities relating to providing such on-location electronics troubleshooting services; database means for maintaining a database of such customer data relating to such at least one customer; database means for maintaining a database of such technician data relating to such at least one technician; computer processor means for managing collecting at least one fee from such at least one customer relating to such on-location electronics troubleshooting services; computer interface and storage means for receiving requests relating to such on-location electronics troubleshooting services from such at least one customer; computer processor and communications-device means for automatically notifying such at least one technician to provide such on-location electronics troubleshooting services requested by such at least one customer;

and computer interface and storage means for recording on-location electronics troubleshooting service information. Moreover, it provides such an Internet website client-server computer system further comprising: computer processor means for substantially fully automating such dispatching of such at least one technician to such at least one customer relating to such on-location troubleshooting. Also, it provides such an Internet website client-server computer system further comprising: computer processing means for selecting such at least one technician using dispatch selection criteria; wherein such dispatch selection criteria comprises such at least one technician assigned to such same geographic dispatch area of such at least one customer requesting on-location electronics troubleshooting services, and such at least one technician having greatest elapsed time since last such dispatch; and communications device means for notifying such at least one technician to provide such on-location electronics troubleshooting services requested by such at least one customer; and computer processor means for recording time of such notification of such at least one technician. Additionally, it provides such an Internet website client-server computer system, wherein such computer processor means for managing collecting at least one fee from such at least one customer relating to such on-location electronics troubleshooting services further

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comprises: computer interface and storage means for receiving credit card account information from such at least one customer; computer processor and communications means for requesting payment from such at least one credit card account on behalf of such at least one customer; and computer processor means for recording such payment on behalf of such at least one customer.

Also, it provides such an Internet-website-client-server-assisted system, wherein such computer processor and communications means for requesting payment from such at least one credit card account on behalf of such at least one customer comprises computer processor and communications means for requesting such at least one payment from such at least one credit card account on behalf of such at least one customer substantially automatically at pre-determined intervals. In addition, it provides such an Internet-website-client-server-assisted system, wherein such computer processor and communications means for requesting payment from such at least one credit card account on behalf of such at least one customer comprises computer processor and communications means for requesting such at least one payment from such at least one credit card account on behalf of such at least one customer at completion of on-location electronics troubleshooting services by such at least one technician. And, it provides such an Internet website client-server computer system, wherein such computer

interface and storage means for receiving requests relating to
such on-location electronics troubleshooting services from such
at least one customer further comprises: computer interface means
for inputting login identification information by such at least
one customer; computer processing means for validating login
identification information from such at least one customer;
computer interface means for receiving confirmation of accuracy
of such customer information; computer interface and storage
means for receiving contact information relating to such current
at least one on-location electronics troubleshooting request; and
computer interface and storage means for receiving at least one
problem description relating to such current at least one on-
location electronics troubleshooting request by such at least one
customer.

Further, it provides such an Internet website client-server
computer system, further comprising: computer interface and
storage means for receiving at least one work shift start request
from such at least one technician; computer interface means for
presenting confirmation of start of work shift to such at least
one technician; computer interface and storage means for
receiving at least one end of work shift request from such at
least one technician; computer interface means for presenting
confirmation of end of work shift to such at least one
technician; computer interface means for presenting planned shift

scheduling to such at least one technician; computer interface and processor means for presenting text reports; and computer interface and processor means for presenting graphical reports. Even further, it provides such an Internet website client-server computer system, wherein such computer interface and storage means for recording on-location electronics troubleshooting service information further comprises: computer interface and storage means for receiving start time of such on-location electronics troubleshooting service from such selected at least one technician; computer interface and storage means for receiving end time of such on-location electronics troubleshooting services from such selected at least one technician; computer interface and storage means for receiving indication of any need relating to repair service from such selected at least one technician; computer interface and storage means for receiving indication of selected type of such repair service from such selected at least one technician; computer processor means for selecting such at least one repair service of such selected type of repair service; communications device means for notifying such selected at least one repair service to contact such at least one customer; and computer interface and storage means for receiving customer satisfaction evaluation.

In accordance with another preferred embodiment hereof, this invention provides at least one network-client-server-assisted

system, relating to assisting providing services to at least one customer, comprising the steps of: maintaining a database on such at least one network-client-server-assisted system of customer-assistance information relating to such at least one customer; receiving, on such at least one network-client-server-assisted system, requests relating to such services from such at least one customer; and notifying automatically, using such at least one network-client-server-assisted system, at least one service provider to provide such services requested by such at least one customer.

Glossary of General Terms and Acronyms

The following terms and acronyms explained below as background and are used throughout the detailed description:

Client-Server. This term is sometimes used herein to refer to a model of interaction in a distributed system in which a program at one site sends a request to a program at another site and waits for a response. The requesting program is called the "client," and the program, which responds to the request, is called the "server." In the context of the World Wide Web, the "client" is often a "Web browser", which runs on a user's computer; the program which responds to HTTP-based requests at a Website is commonly referred to as a "Web server." Additionally, "Client" may be an executable program running on a user's computer which communicates with a "server" or "Web server" via

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the Internet or other networking methods using HTTP.

Domain Name System (DNS). This term is sometimes used herein to refer to an Internet service that translates domain names (which are alphabetic identifiers) into IP addresses (which are numeric identifiers for machines on a TCP/IP network).

File Transfer Protocol (FTP). This term is sometimes used herein to refer to the Internet standard high-level protocol for transferring files from one machine to another over TCP/IP networks. FTP is commonly used to download programs and other files to a computer from other servers. It is also used to transfer Web page files.

Internet. This term is sometimes used herein to refer to a collection of interconnected (public and/or private) networks that are linked together by a set of standard protocols to form a distributed network. While this term is intended to refer to what is now commonly known as the Internet, it is also intended to encompass variations, which may be made in the future, including changes and additions to existing standard protocols.

HyperText Markup Language (HTML). This term is sometimes used herein to refer to a standard coding convention and set of codes for attaching presentation and linking attributes to informational content within documents. During a document authoring stage, the HTML codes (referred to as "tags") are embedded within the informational content of the document. When

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the Web document (or "HTML document") is subsequently transferred from a Web server to a Web browser (or suitable executable program), the codes are interpreted by the Web browser (or suitable executable program) and used to parse and display the document. In addition to specifying how the Web browser (or suitable executable program) is to display the document, HTML tags can be used to create links to other websites and other Web documents (commonly referred to as "hyperlinks"). For more information on HTML, see Ian S. Graham, The HTML Source Book, John Wiley and Sons, Inc., 1995 (ISBN 0471-11894-4).

HyperText Transport Protocol (HTTP). This term is sometimes used herein to refer to the standard World Wide Web client-server protocol used for the exchange of information (such as HTML documents, and client requests for such documents) between a Web browser or suitable executable program and a Web server. HTTP includes a number of different types of messages that can be sent from the client to the server to request different types of server actions. For example, a "GET" message, which has the format GET, causes the server to return the document or file located at the specified Universal Resource Locator (URL).

LAN (Local Area Network) - This term is sometimes used herein to refer to a system that links together electronic office equipment, such as computers and word processors, and forms a network within an office or building.

Transmission Control Protocol/Internet Protocol (TCP/IP).
This term is sometimes used herein to refer to a standard
Internet protocol (or set of protocols) which specifies how two
computers exchange data over the Internet. TCP/IP handles issues
such as packetization, packet addressing, and handshaking and
error correction. For more information on TCP/IP, see Volumes I,
II and III of Comer and Stevens, Internetworking with TCP/IP,
Prentice Hall, Inc., ISBNs 0-13-468505-9 (vol. I), 0-13-125527-4
(vol. II), and 0-13-474222-2 (vol. III).

Troubleshoot. This term is sometimes used herein to refer
to a process of diagnosing and locating the source of a problem
and taking corrective action up to, but not including repair.

Troubleshooter. This term is sometimes used herein to refer
to a person with appropriate skills who is capable of diagnosing
and locating the source of a problem and taking corrective action
up to, but not including repairs

Uniform Resource Locator (URL). This term is sometimes used
herein to refer to a unique address which fully specifies the
location of a file or other resource on the Internet. The
general format of a URL is protocol://machine
address:port/path/filename. The port specification is optional,
and if none is entered by the user, the Web browser (or suitable
executable program) defaults to the standard port for whatever
service is specified as the protocol. For example, if HTTP is

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specified as the protocol, the Web browser (or suitable
executable program) will use the HTTP default port. The machine
address in this example is the domain name for the computer or
device on which the file is located.

WAN (Wide Area Network) - This term is sometimes used herein
to refer to a communications network that uses such devices as
telephone lines, satellite dishes, or radio waves to span a
larger geographic area than can be covered by a LAN.

Work Cell. Used herein to refer generally to geographic
areas that define the boundaries of service provided by
technicians. Generally, work cell boundaries are set to ensure
technicians can reach any customer within a predetermined time
from dispatch.

World Wide Web ("Web"). Used herein to refer generally to
both (1) a distributed collection of interlinked, user-viewable
hypertext documents (commonly referred to as "Web documents",
"Web pages", "electronic pages" or "homepages") that are
accessible via the Internet, and (2) the client and server on-
location services management software components that provide
user access to such documents using standardized Internet
protocols. Currently, the primary standard protocol for allowing
applications to locate and acquire Web documents is the HyperText
Transfer Protocol (HTTP), and the electronic pages are encoded
using the HyperText Markup Language (HTML). However, the terms

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"World Wide Web" and "Web" are intended to encompass future markup languages and transport protocols that may be used in place of or in addition to the HyperText Markup Language and the HyperText Transfer Protocol.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic overview illustrating an example of the hardware architecture of the Internet.

FIG. 2 is a schematic illustration of the typical communications between the on-location electronics troubleshooting services website components and on-location electronics troubleshooting services workstation components of various types of users, according to a preferred embodiment of the present invention.

FIG. 3 is a schematic illustrating the customer sign up portion of a preferred on-location electronics troubleshooting services business method using an Internet website-based server system, according to a preferred embodiment of the present invention.

FIG. 4 is a schematic illustrating the preferred on-location services portion of a preferred on-location electronics troubleshooting business method using an Internet website-based server system, according to a preferred embodiment of the present invention.

FIG. 5 is a schematic illustrating preferred methods for

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technicians', supervisors', customers', others interactions with the on-location services management software, including changing customer billing information, technician and supervisor shift start and end and other similar activities.

FIG. 6 presents an example of a preferred electronic display screen image illustrating the customer start screen for communicating with the website-based server of the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 7 illustrates an example of a preferred electronic display screen image illustrating the customer brief delay notice presented while a session for a customer is started on the website-based server of the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 8 illustrates an example of a preferred electronic display screen image showing how a customer may login to the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 9 presents a preferred electronic display screen image example illustrating the error message received by a customer who has attempted to login with an incorrect pin number, according to a preferred embodiment of the present invention.

FIG. 10 illustrates a preferred electronic display screen

image example of the message received when a customer cannot login or has forgotten a pin number, according to a preferred embodiment of the present invention.

FIG. 11 is a preferred electronic display screen image example of a request by the on-location electronics troubleshooting services system for the customer to verify key contact information, according to a preferred embodiment of the present invention.

FIG. 12 presents a preferred electronic display screen image example directing the customer to use the on-location electronics troubleshooting services system website to fix incorrect account information, according to a preferred embodiment of the present invention.

FIG. 13 illustrates a preferred electronic display screen image of customer confirmation of contact information for a trouble call for the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 14 is a preferred electronic display screen image for customer entry of a description of the technical problem for which on-location electronics troubleshooting services are requested, according to a preferred embodiment of the present invention.

FIG. 15 presents a preferred electronic display screen image

of processing request notice presented to a customer after entry
of a technical problem by the on-location electronics
troubleshooting services system, according to a preferred
embodiment of the present invention.

FIG. 16 illustrates a preferred electronic display screen
image notifying the customer their on-location electronics
troubleshooting services request was not received, according to a
preferred embodiment of the present invention.

FIG. 17 illustrates a preferred electronic display screen
image notifying the customer their on-location electronics
troubleshooting services request was received and confirmation
has been sent to their e-mail address.

FIG. 18 presents a preferred electronic display screen image
informing the customer that no connection to the Internet was
found when a customer attempted to use the on-location
electronics troubleshooting services system, according to a
preferred embodiment of the present invention.

FIG. 19 presents an example of a preferred electronic
display screen image illustrating the technician start screen for
communicating with the website-based server of the on-location
electronics troubleshooting services system, according to a
preferred embodiment of the present invention.

FIG. 20 illustrates an example of a preferred electronic
display screen image illustrating the technician brief delay

notice presented while a session for a technician is started on the website-based server of the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 21 illustrates an example of a preferred electronic display screen image showing how a technician may login to the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 22 presents a preferred electronic display screen image example illustrating the error message received by a technician who has attempted to login with an incorrect technician ID number, according to a preferred embodiment of the present invention.

FIG. 23 illustrates a preferred electronic display screen image example of the message received when a technician cannot login or has forgotten a technician ID number, according to a preferred embodiment of the present invention.

FIG. 24 provides a preferred electronic display screen image illustrating the presentation of the technician work shift schedule and key contact information contained in the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 25 illustrates the preferred shift start confirmation message sent to the technician as an electronic display screen

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image after successfully "clocking in" to the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 26 presents a preferred electronic display screen image notifying the technician when an attempt to "clock out" was made without having "clocked in" to the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 27 presents a preferred electronic display screen image notifying the technician that an attempt to "clock in" to the on-location electronics troubleshooting services system prior to the start of a scheduled shift was made too early, according to a preferred embodiment of the present invention.

FIG. 28 provides a preferred electronic display screen image notifying the technician that the "clock out" request to end the shift was successful, according to a preferred embodiment of the present invention.

FIG. 29 presents a preferred electronic display screen image informing the technician that no connection to the Internet was found when a customer attempted to use the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 30 illustrates a preferred electronic display screen image notifying the technician that the technician's on-location

electronics request transmission was not received, according to a preferred embodiment of the present invention.

FIG. 31 presents an example of a preferred electronic display screen image illustrating the supervisor start screen for communicating with the website-based server of the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 32 illustrates an example of a preferred electronic display screen image illustrating the supervisor brief delay notice presented while a session for a supervisor is started on the website-based server of the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 33 illustrates an example of a preferred electronic display screen image showing how a supervisor may login to the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 34 presents a preferred electronic display screen image example illustrating the error message received by a supervisor who has attempted to login with an incorrect supervisor ID number, according to a preferred embodiment of the present invention.

FIG. 35 illustrates a preferred electronic display screen image example of the message received when a supervisor cannot

login or has forgotten a supervisor ID number, according to a preferred embodiment of the present invention.

FIG. 36 illustrates the preferred shift start confirmation message sent to the supervisor as an electronic display screen image after successfully "clocking in" to the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 37 presents a preferred electronic display screen image notifying the supervisor when an attempt to "clock out" was made without having "clocked in" to the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 38 presents a preferred electronic display screen image notifying the supervisor that an attempt to "clock in" to the on-location electronics troubleshooting services system prior to the start of a scheduled shift was made too early, according to a preferred embodiment of the present invention.

FIG. 39 provides a preferred electronic display screen image notifying the supervisor that the "clock out" request to end the shift was successful, according to a preferred embodiment of the present invention.

FIG. 40 presents a preferred electronic display screen image informing the supervisor that no connection to the Internet was found when a supervisor attempted to use the on-location

electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 41 illustrates a preferred electronic display screen image notifying the supervisor that the supervisor's on-location electronics request transmission was not received, according to a preferred embodiment of the present invention.

FIG. 42 provides a preferred electronic display screen image illustrating the presentation to the supervisor of the technician work shift schedule and key contact information contained in the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 43 illustrates a preferred electronic display screen image of a supervisor's feedback report of on-location electronics troubleshooting services requests handled by technician in a specified work cell for a specified date range, according to a preferred embodiment of the present invention.

FIG. 44 provides a preferred electronic display screen image of the screen used by the supervisor to modify the current work shift schedules contained in the on-location electronics troubleshooting services system, according to a preferred embodiment of the present invention.

FIG. 45 illustrates a preferred electronic display screen image of the homepage which presents the initial user selection options for the on-location electronics troubleshooting services

system website, according to a preferred embodiment of the present invention.

FIG. 46 is an electronic display screen image of the preferred screen requesting contact information which is presented to users who selected the "Interested in Our Service?" text link on the website homepage, according to a preferred embodiment of the present invention.

FIG. 47 presents a preferred electronic display screen presented to users interested in on-location electronics troubleshooting services after submitting contact information to the on-location electronics troubleshooting services system website, according to a preferred embodiment of the present invention.

FIG. 48 provides a preferred electronic display screen image requesting customer phone number and PIN number which is presented to users who selected the "Customer Login" text link from the on-location electronics troubleshooting services system website homepage, according to a preferred embodiment of the present invention.

FIG. 49 illustrates a preferred electronic display screen image presented to users when they have not entered a correct phone number or PIN number, according to a preferred embodiment of the present invention.

FIG. 50 presents a preferred electronic display screen image

displaying the preferred options available to customers after successfully logging in to the on-location electronics troubleshooting services system website, according to a preferred embodiment of the present invention.

FIG. 51 provides an example of a preferred electronic display screen image thanking the customer for submitting comments regarding the on-location electronics troubleshooting services, according to a preferred embodiment of the present invention.

FIG. 52 provides a preferred electronic display screen image requesting technician phone number and PIN number which is presented to users who selected the "Technician Login" text link from the on-location electronics troubleshooting services system website homepage, according to a preferred embodiment of the present invention.

FIG. 53 illustrates a preferred electronic display screen image presented to a technician when the technician has not entered a correct phone number or PIN number, according to a preferred embodiment of the present invention.

FIG. 54 presents a preferred electronic display screen image displaying the preferred options available to technicians after successfully logging in to the on-location electronics troubleshooting services system website, according to a preferred embodiment of the present invention.

FIG. 55 is an illustration of a preferred electronic display screen image for completing a work order presented to a technician who chose the "Complete Work Order" text link from technician options screen, according to a preferred embodiment of the present invention.

FIG. 56 provides a preferred electronic display screen image used to notify a technician that an incorrect work order number was entered when attempting to complete a work order and to request reentry of the work order number and other requested information, according to a preferred embodiment of the present invention.

FIG. 57 illustrates a preferred electronic display screen image presented to a technician after successfully completing a work order and indicating the customer requires a contractor for further repairs, according to a preferred embodiment of the present invention.

FIG. 58 provides an illustration of a preferred electronic display screen image presented to the technician/customer after successfully completing a work order which requests that customers preferably provide an indication of their level of satisfaction, according to a preferred embodiment of the present invention.

FIG. 59 provides a preferred electronic display screen image used to notify a customer that an incorrect customer PIN number

was entered when attempting to indicate level of satisfaction with a technician's work a work order and to request reentry of the customer PIN number and level of satisfaction, according to a preferred embodiment of the present invention.

FIG. 60 provides an example of a preferred electronic display screen image thanking customers for using on-location electronics troubleshooting services which is presented after successfully providing an indication of their level of satisfaction, according to a preferred embodiment of the present invention.

FIG. 61 is a preferred electronic display screen image requesting a customer's contact and credit card information which is presented after a technician has selected the "Initial Customer Setup" text link on the electronic display screen image presented in FIG. 54, according to a preferred embodiment of the present invention.

FIG. 62 illustrates a preferred electronic display screen image presented to a technician after successful entry of a customer's contact and credit card information which allows the technician to set up the required customer interface software download to the customer's personal computer, according to a preferred embodiment of the present invention.

FIG. 63 presents an illustration of a preferred electronic display screen image requesting that the customer's contact and

credit card information be re-entered because the credit card was not accepted on the first entry, according to a preferred embodiment of the present invention.

FIG. 64 is an electronic display screen image of the preferred screen requesting contact and low voltage background information which is presented to users who selected the "Interested in becoming a Systemsecure technician?" text link on the website homepage, according to a preferred embodiment of the present invention.

FIG. 65 provides a preferred electronic display screen image requesting supervisor phone number and PIN number which is presented to users who selected the "Supervisor Login" text link from the on-location electronics troubleshooting services system website homepage, according to a preferred embodiment of the present invention.

FIG. 66 illustrates a preferred electronic display screen image presented to supervisors who have not entered a correct phone number or PIN number, according to a preferred embodiment of the present invention.

FIG. 67 is a preferred electronic display screen image requesting a technician's contact information which is presented after a supervisor has successfully logged in to the on-location electronics troubleshooting services system website, according to a preferred embodiment of the present invention.

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FIG. 68 illustrates a preferred electronic display screen image presented to a supervisor after successful entry of a technician's contact information which allows the technician to set up the required technician interface software download to the technician's personal computer, according to a preferred embodiment of the present invention.

FIG. 69 presents a preferred electronic display screen image, which is displayed when a customer selects the "Modify billing info" text link on the electronic display screen image presented in FIG. 50 and which allows a customer to modify customer contact and credit card information, according to a preferred embodiment of the present invention.

FIG. 70 provides an illustration of a preferred electronic display screen image presented to customers after successfully changing contact and credit card information, according to a preferred embodiment of the present invention.

FIG. 71 is a schematic illustrating a preferred alternate on-location electronics troubleshooting services business method using telephones in combination with an Internet website-based server system for selected functions, according to a preferred embodiment of the present invention.

FIG. 72 is a schematic illustrating a preferred electronics supplier sales partnering business method, according to a preferred embodiment of the present invention.

FIG. 73 is a schematic illustrating a services business method using an Internet website-based server system, according to an alternate preferred embodiment of the present invention.

FIG. 74 is a schematic illustrating an overview of how the invention may, under appropriate circumstances, suffice to provide a variety of benefits and be implemented to solve many different problems, according to an alternate preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE BEST MODES AND

AND PREFERRED EMBODIMENTS OF THE INVENTION

Referring now to FIG. 1, a schematic overview of a preferred embodiment of the present invention on the Internet is shown. The present invention preferably comprises a web server **101**. The web server **101** comprises input and output devices as is well known in the art. For example, the web server **101** preferably comprises a central processing unit (CPU) **108**, a display screen or monitor **102**, a keyboard **104**, a printer **106**, a mouse **105**, etc. The web server **101** further preferably comprises a database **103** for storage of the data and software comprising preferred embodiments of the present invention. The web server **101** is preferably connected to the Internet **107** that serves as the presently preferred communications medium. The Internet **107** comprises a global network of networks and computers, public and private. The Internet **107** is the preferable connection method to

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the users' workstations **109, 110, 111** and **nnn** in preferred embodiments of the present invention.

The CPU **108** executes program code stored in one or more of ROM, RAM and mass storage devices to carry out the functions and acts described in connection with the web server **101**. The CPU **108** comprises at least one conventional high-speed digital microprocessor such as an Intel Pentium processor, electrically coupled to each of the other components of the web server **101**, adequate to execute program modules for all application functions including, but not limited to executing customer login, technician login, supervisor login, interaction with customer, technician and supervisor local software, supervisor and manager reporting processes, communicating with the banking system, selected electronics suppliers, electronics repair contractors and at least one telephone interface system. The CPU **108** interacts with ROM, RAM and the mass storage device to execute stored program code according to conventional data processing techniques.

According to one embodiment of the invention, as shown in FIG. 1, each user workstation device **109, 110, 111** and **nnn** is a browser based system implemented as a single interactive visual display device, audio device or other like interactive device such as a general purpose computer, a personal digital assistance (PDA), phone, or interactive television system. There are many

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commercial software programs that can enable the communications required by the consumer workstations with the Web Server **101**, the primary function being transmission and reception of data through the Internet and presentation of data to the consumer. Examples of such software programs include the Netscape Navigator browser by Netscape Corporation and the Internet Explorer browser by Microsoft Corporation.

Each user workstation **109, 110, 111** and **nnn** (collectively nodes) is capable of communicating directly and indirectly with the Web Server **101**. Communication between each node **109, 110, 111** and **nnn** and the web server **101** is electronic by means of known communication protocols, such as TCP/IP, and is capable of decrypting and encrypting data received and transmitted between nodes **109, 110, 111** and **nnn**. Each node **109, 110, 111** and **nnn** may be connected directly or indirectly to the website server **101** via a connection to a network, such as a local area network (LAN), a wide area network (WAN), the Internet **107** or the like, via a public switched phone network, dedicated data line, cellular network, Personal Communication System, microwave, satellite networks, cable or the like.

In a preferred embodiment shown in FIG. 1 the web server **101** is implemented as a single general purpose computer. In another preferred embodiment, the functionality of the web server **101** is distributed over a plurality of computers. In that preferred

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embodiment, the web server 101 is configured in a distributed architecture, wherein the databases and processors are housed in separate units or locations and connected via a network connection such as those discussed above. Those skilled in the art will appreciate that an almost unlimited number of processors may be supported. This arrangement yields a more dynamic and flexible system, less prone to catastrophic hardware failures affecting the entire system.

Although the illustrated overview is one preferred embodiment, one skilled in the art will appreciate that, under appropriate circumstances, various sections may be omitted, rearranged or adapted in various ways for various purposes.

Referring now to FIG. 2, it presents a schematic overview of the preferred functional modules of the present invention. Preferably, the Web Server 101 and its underlying on-location services management software provide all the services requested or required for each of the other functions. Preferably, the underlying on-location services management software is constructed using available software development languages such as Java, Visual Basic and the like. The database management preferably utilizes commercially available products such as Oracle, Microsoft SQL Server and the like.

Preferably, the Website Interface software 201 provides access to the web site through a connection to the Internet 107

to perform a variety of functions at the request of users. Preferably, it allows existing customers **303** to login to the on-location services management software on the Web Server **101** and make changes to their customer information including credit card billing information. Additionally, customers **303** may preferably request that on-location electronics troubleshooting services be provided at an additional location, move the existing services to another location, install the user interface software on another computer or make a comment.

Preferably, it also provides the capability for users interested in on-location electronics troubleshooting services to request they be contacted. Preferably, it also provides the opportunity for technicians **304** to login to the on-location services management software operating on the Web Server **101** for initial customer setup and customer interface software **202** download, to record completion of work orders and to assist customers **303** in the completion of a satisfaction survey.

Additionally, it preferably provides a means for supervisors to login to the on-location services management software operating on the Web Server **101** to assist new technicians **304** in initial setup and technician interface software **207** download to the technician's personal computer. Also, it preferably provides the capability for technicians **304** interested in providing on-location electronics troubleshooting services to apply for

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employment.

Preferably, the Customer Interface software **202** has been downloaded from the Web Server **101** to the personal computer belonging to the customer **303** for use by an existing customer **303** to preferably request that on-location electronics troubleshooting services be performed. A request for services from a customer **303** and subsequent responses are preferably transmitted via the Internet **107** to the on-location services management software operating on the Web Server **101**.

The Electronics Suppliers' Web Server **203** preferably may be accessed from the on-location services management software operating on the Web Server **101** by a customer **303** via a link via the Internet **107** for the purpose of purchasing a product from the electronics supplier.

The Supervisor Interface software **204** is preferably a downloaded software program resident on a supervisor's personal computer which preferably communicates with the on-location services management software operating on the Web Server **101** via the Internet **107**. The Supervisor Interface software **204** preferably permits a supervisor to login to the on-location services management software operating on the Web Server **101** and perform a variety of tasks preferably including recording the beginning and ending times of a shift, viewing and creating and

modifying technician work schedule and contact information, and viewing reports of on-location electronics troubleshooting services performed.

The Owner/Manager Interface software **205** is preferably a downloaded software program resident on an owner/manager's personal computer which preferably communicates with the on-location services management software operating on the Web Server **101** via the Internet **107**. The Owner/Manager Interface **205** preferably permits an owner/manager to login to the on-location services management software operating on the Web Server **101** and perform a variety of tasks preferably including viewing technician work schedules and contact information, viewing a variety of reports including on-location electronics troubleshooting services performed and customer satisfaction reports.

Preferably, the Banking System **206** communicates the on-location services management software operating on the Web Server **101** via the Internet **107** to verify customer credit card information and accept credit card transactions presented for collection by the on-location services management software on the Web Server **101**.

The Technician Interface software **207** is preferably a downloaded software program resident on a personal computer belonging to a technician **304** which preferably communicates with

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the on-location services management software operating on the Web Server **101** via the Internet **107**. The Technician Interface **207** preferably permits a technician **304** to login to the on-location services management software operating on the Web Server **101** and perform a variety of tasks preferably including recording the beginning and ending times of a shift and viewing technician work schedules.

The Telephone **208** (which may be a standard corded or wireless telephone or a standard cellular telephone) and telephone interface preferably work in concert to provide an alternative method for customers **303** to request on-location electronics troubleshooting services. Additionally, the Telephone **208** and telephone interface **209** preferably provide an alternative method for technicians **304** and supervisors **302** to record the beginning and ending times of a shift. Preferably, on-location services management software on the Web Server **101** periodically queries telephone interface **209** for messages via the Internet **107**. Preferably, when messages are presented they are removed from telephone interface **209** and processed by on-location services management software on the Web Server **101** to complete the actions requested by customers **303**, technicians **304** and supervisors **302**.

Preferably, email messages are sent to Repair Companies **210**

via the Internet **107** by the on-location services management software on the Web Server **101** whenever it has been determined that a customer **303** requires a repair and a technician **304** has entered the information via the Website Interface **201**. The email message is sent to a selected repair company which will preferably contact the customer **303** to schedule the required services. Preferably, technicians **304** are dispatched using text messaging and paging **211** performed directly by the on-location services management software operating on the Web Server **101**.

Although the illustrated overview is one preferred embodiment, one skilled in the art, upon reading this specification, will appreciate that, under appropriate circumstances, various sections may be omitted, rearranged or adapted in various ways for various purposes.

According to a preferred embodiment of the present invention, preferably a combination of on-location services management software and Internet services are utilized to manage and dispatch technicians **304** to troubleshoot reported problems with low-voltage electronics in homes and small businesses at any time of day, any day of the week, and any day of the year. A preferred goal is for the technician **304** to arrive on-location within a timeframe of less than one hour from the time of receipt of the request for on-location electronics troubleshooting services. Preferably, to accomplish a rapid response to customer

requests for troubleshooting assistance, work cells will be defined which preferably include an appropriate number of technicians **304** and customers **303**. In addition, technicians **304** are assigned to work cells on the basis of their residence; preferably technicians **304** who live within a given work cell are assigned to that work cell. Under appropriate circumstances, technicians **304** may be assigned to work cells which do not include their residence.

Preferably, technicians **304** are automatically dispatched to the location of customer **303** using pager text messages generated from the entered and stored information by the customer **303**, such as contact name and address and telephone numbers. Preferably, technician dispatch is automatically performed using an algorithm which considers the time of the last dispatch for each technician **304** assigned to a work cell and dispatches the technician **304** with the longest time since the last dispatch.

Referring now to FIG. 3, a schematic overview of a preferred embodiment of the primary business elements of the present invention is shown.

In a preferred embodiment of the present invention, in the initial contact step **311** a customer **303** learns of the on-location electronics troubleshooting services from advertising and other marketing activities and preferably expresses an interest in the services through the Web Site Home Page, FIG. 45, Interested in

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Our Service screen, FIG. 46, and the Thanks, You will be contacted screen, FIG. 47. Preferably, in customer contact step 321 the Owner/Manager 301 contacts the customer 303 using one or more typical methods and preferably the customer 303 agrees to subscribe to the on-location electronics troubleshooting services for a period of at least one year and preferably to pay the agreed monthly fee via an automatic monthly charge to a credit card belonging to the customer 303.

In a preferred embodiment of the present invention, as illustrated by the technician 304 dispatch step 322, once a potential customer 303 has agreed to subscribe to the on-location electronics troubleshooting services, a technician 304 will be dispatched to the home or place of business of the potential customer 303. Preferably, once the technician 304 is at the service location of customer 303, he or she will complete the customer sign up step 322 by logging on to the on-location services management software operating on the Web Server 101, as shown in FIG. 45, FIG. 52, FIG. 53 and FIG. 54; and the customer 303 will preferably enter his or her name and address and contact information and credit card information, as illustrated in FIG. 61 and FIG. 62 (embodying herein computer interface and storage means for registering customer data for at least one customer). After entry and acceptance of the credit card information, the customer information is stored in the database (embodying herein

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database means for maintaining a database of such customer data

for such at least one customer and embodying herein computer

interface and storage means for receiving credit card account

information from such at least one customer) and the customer

interface software **202** is downloaded from the Web Server **101** and

installed on a personal computer which is, or can be, connected

to the Internet **107**, as shown in FIG. 3. Preferably, the

technician **304** instructs the customer **303** on the usage of the

customer interface software **202**.

Referring again to FIG. 3, in the "arrange for credit card

processing" step **351**, the owner/manager **301** will preferably

conclude an agreement with appropriate credit card processing

companies **305** to permit verification of credit cards of customer

303; and then the processing may begin of credit card payment

requests and automatic deposit of the payments to a specified

bank account on behalf of the owner/manager **301**. In the request

payment step **352**, on completion of a service request preferably

the on-location services management software will preferably

create a payment request for the customer **303** and transmit it to

the credit card processing company **305** for payment to the

owner/manager **301**. Alternatively, in the request payment step

352, each month the on-location services management software will

preferably automatically create a payment request for each

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customer **303** and transmit it to the credit card processing

company **305** for payment to the owner/manager **301**. In the receive

payments step **353** the owner/manager **301** preferably receives the

customer **303** payments (embodying herein computer processor means

for managing collecting at least one fee from such at least one

customer relating to such on-location electronics troubleshooting

services; and embodying herein computer processor and

communications means for requesting payment from such at least

one credit card account on behalf of such at least one customer;

and embodying herein computer processor means for recording such

payment on behalf of such at least one customer; and embodying

herein computer processor and communications means for requesting

payment from such at least one credit card account on behalf of

such at least one customer comprises computer processor and

communications means for requesting such at least one payment

from such at least one credit card account on behalf of such at

least one customer at completion of on-location electronics

troubleshooting services by such at least one technician; and

embodying herein computer processor and communications means for

requesting such at least one payment from such at least one

credit card account on behalf of such at least one customer

substantially automatically at pre-determined intervals).

Referring now to FIG. 4, in a preferred embodiment of the

present invention, the first step of providing on-location

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support is illustrated by the services request step **421** in which

a customer **303,** preferably using the customer interface software

202, logs in to the on-location services management software

operating on the Web Server **101** using his or her customer ID

number (embodying herein computer interface means for inputting

login identification information by such at least one customer)

and preferably completes a request for on-location assistance.

The preferred login software interactions between the customer

303 and the customer interface software **202** are presented in FIG.

6, FIG. 7, FIG. 8, FIG. 9 FIG. 10, FIG. 11 and FIG. 12. The

preferred assistance request interactions between the customer

303 and the customer interface software **202** are illustrated in

FIG. 13, FIG. 14, FIG. 15, FIG. 16, FIG. 17, and FIG. 18

(embodying herein computer interface and storage means for

receiving requests relating to such on-location electronics

troubleshooting services from such at least one customer).

Referring further to FIG. 4, in the technician dispatch step

422 preferably a technician **304** is selected from the technicians

304 assigned to the work cell in which the customer **303** is

located and is preferably dispatched by on-location services

management software running on the Web Server **101.** Preferably,

the on-location services management software considers the

elapsed time since the last dispatch for each available

technician **304** (embodying herein computer processing means for

selecting such at least one technician using dispatch selection criteria) and automatically selects the technician **304** with the longest period since the last dispatch (embodying herein wherein such dispatch selection criteria comprises such at least one technician assigned to such same geographic dispatch area of such at least one customer requesting on-location electronics troubleshooting services, and such at least one technician having greatest elapsed time since last such dispatch). Preferably, after selecting an available technician **304** the on-location services management software sends an alpha/numeric page to the selected technician **304** and records the time the page was sent to the technician **304** in the database with the original service request from the customer **303** (embodying herein computer processor means for substantially fully automating such dispatching of such at least one technician to such at least one customer relating to such on-location troubleshooting; and embodying herein computer processor means for recording time of such notification of such at least one technician). The alphanumeric page preferably provides the necessary information, including contact name, contact phone number and location address, for the technician **304** to contact the customer **303** (embodying herein computer processor and communications-device means for automatically notifying such at least one technician to provide such on-location electronics troubleshooting services

requested by such at least one customer; and embodying herein
communications device means for notifying such at least one
technician to provide such on-location electronics
troubleshooting services requested by such at least one
customer). Preferably, on receipt of the pager message the
technician **304** will call the customer **303** and provide an
estimated time of arrival.

Referring to FIG. 4 again, preferably the step of problem
resolution **423** begins with the arrival of the technician **304** at
the service location of the customer **303** who requested the
troubleshooting service. On arrival, the technician **304** will
preferably evaluate the problem reported by the customer **303** and
make any necessary adjustments, changes in settings and
parameters and, in general, preferably do all that is possible to
solve the reported problem without making an internal repair to
the problem low-voltage equipment. If the technician **304** cannot
resolve the reported problem preferably the customer **303** is
advised to arrange for a repair to the problem low-voltage
equipment.

·Preferably, as the final part of the problem resolution step
423, at the completion of troubleshooting the technician **304** will
preferably use a personal computer at the customer **303** location
to close the troubleshooting request. Preferably, the technician
304 will login to the on-location services management software on

the Web Server **101** as shown in FIG. 45, FIG. 52, FIG. 53 and FIG.

54. After successfully logging in, the technician **304** preferably

reports the start and completion times of the troubleshooting

effort (embodying herein computer interface and storage means for

receiving start time of such on-location electronics

troubleshooting service from selected such at least one

technician; and embodying herein computer interface and storage

means for receiving end time of such on-location electronics

troubleshooting services from selected such at least one

technician) and if necessary, requests repair service specifying

the type of repair service needed and submits the information to

be stored in the on-location services management software

database (embodying herein computer interface and storage means

for recording on-location electronics troubleshooting service

information; and embodying herein computer interface and storage

means for receiving of any need relating to repair service from

such selected at least one technician; and embodying herein

computer interface and storage means for receiving indication of

selected type of such repair service from such selected at least

one technician; and embodying herein computer processor means for

selecting such at least one repair service of such selected type

of repair service). Then the technician **304** requests that the

customer **303** indicate his or her level of satisfaction with the

service as illustrated in FIG. 55, FIG. 56, FIG. 57, FIG. 58,

FIG. 59 and FIG. 60 (embodying herein computer interface and storage means for receiving customer satisfaction evaluation). If the customer 303 has indicated dissatisfaction with the service provided the on-location services management software on the Web Server 101 will initiate an alpha/numeric page to the supervisor 302, as shown in supervisor notice step 441, who will preferably take necessary actions to resolve the customer 303 dissatisfaction.

Further, if the technician 304 has indicated the need for a repair to the problem low-voltage equipment, the on-location services management software on the Web Server 101 will generate an email notice to a number of selected repair companies 306, as shown in repair company notice step 424. Preferably, the on-location services management software on the Web Server 101 selects a pre-determined number of repair companies 306 from a pre-qualified list of companies that specialize in the type of repairs required by the customer 303 (embodying herein communications device means for notifying such selected at least one repair service to contact such at least one customer). After receiving the email notice, preferably a selected number of repair companies 306 will contact the customer 303 directly and arrange the repairs and subsequent payment by the customer 303 to the repair company 306 as shown in the equipment repairs step

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Referring again to FIG. 4, as illustrated by "arrange repair services" step **461**, the owner/manager **301** preferably identifies repair companies **306** which can provide repairs for customers **303**. Preferably, the owner/manager **301** will evaluate skill and quality of service of each candidate repair company **306**, selecting only those which meet the standards of the owner/manager **301**. Preferably, each selected repair company **306** will complete an agreement to meet the required standards of service and provide a commission to the owner/manager **301** for each completed repair. In the repair service set up step **471**, the owner/manager **301** will load each repair company **306** with which the owner/manager **301** has completed an agreement. In the commission payment step **462**, preferably each repair company **306** will pay the owner/manager **301** a commission based on the number and amount of each completed repair on an agreed schedule.

Referring to FIG. 4, after completion of the requested repairs the customer **303** will be given the opportunity to report completion of the repairs and in return be eligible to receive a portion of the commission paid by the repair company **306** to the owner/manager **301**.

Referring to FIG. 5, in the customer update step **521**, preferably the customer **303** can login to the on-location services

management software on the Web Server **101** to update billing and contact information, request addition of service for an additional location, request moving the service to a different location, request installation of the customer interface software **202** on a different personal computer. These activities are illustrated in FIG. 45, FIG. 48, FIG. 49, FIG. 50, FIG. 69 and FIG. 70. Additionally, a customer **303** can preferably provide additional feedback or comments as illustrated in FIG. 51.

Additionally, as shown in FIG. 5, a technician **304** may apply to work for/with the owner/manager **301** in technician application step **531**. This activity is illustrated by the screens shown in FIG. 45 and FIG. 64. After acceptance of a technician **304** to work with/for the owner/manager **301** a supervisor **302** will go to the residence of the technician **304** to set up the technician interface software **207** on a personal computer which is capable of being connected to the Internet **107**, as shown in technician set up step **541**. Preferably, the supervisor **302** will login to the on-location services management software on the Web Server **101** using a typical browser as shown in FIG. 45, FIG. 65 and FIG. 66. After successfully logging in, the supervisor **302** accesses the Create Employee Account screen, as shown in FIG. 67, and preferably enters all the requested information (embodying herein computer interface and storage means for registering technician

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data relating to at least one technician having electronics-technician abilities relating to providing such on-location electronics troubleshooting services). After completing the Create Employee Account screen, the technician information is saved to the database (embodying herein database means for maintaining a database of such technician data relating to such at least one technician). The supervisor will preferably use the Download Employee Software screen, as shown in FIG. 68, to download the Technician Interface software **207** from the Web Server **101** and install it on the personal computer belonging to the technician **304**.

Further, as shown in FIG. 5, the technician schedule step **532** preferably includes several technician **304** activities. First each technician **304** will login through the technician interface software **207** as illustrated by the screens shown FIG. 31, FIG. 32, FIG. 33, FIG. 34, FIG. 35, FIG. 40 and FIG. 41. Upon a successful login, preferably each technician **304** will indicate either the start or end time of his or her shift, as shown in the screen examples illustrated in FIG. 25, FIG. 26, FIG. 27 and FIG. 28. Preferably, by indicating the shift start time makes a technician **304** available to receive dispatch messages from the on-location services management software on the Web Server **101**. Likewise, indicating the shift end time makes the technician **304** unavailable for dispatch messages. After a successful login, the

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technician **304** may also query the on-location services management software on the Web Server **101** for the current schedule and technician **304** contact information, as shown in the screen example shown in FIG. 24.

Once again, referring to FIG. 5, preferably the supervisor **302** uses the supervisor interface software **204** to complete several actions as part of supervisor schedule step **542**. The supervisor **302** preferably logs in the on-location services management software on the Web Server **101** using the Supervisor Interface software **204** installed on his or her personal computer. The screens used for login are shown in FIG. 31, FIG. 32, FIG. 33, FIG. 34, FIG. 35, FIG. 40 and FIG. 41. Preferably, upon a successful login, each supervisor **302** will indicate either the start or end time of his or her shift, as shown in the screen examples illustrated in FIG. 36, FIG. 37, FIG. 38 and FIG. 39. Preferably, by indicating the shift start time makes a supervisor **302** available to receive messages from the on-location services management software on the Web Server **101**. Likewise, indicating the shift end time makes the supervisor **302** unavailable for messages. After a successful login, the supervisor **302** may also query the on-location services management software on the Web Server **101** for the current schedule and supervisor **302** and technician **304** contact information, as shown in the screen

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example shown in FIG. 42. Additionally, a supervisor **302** may

elect to view a report of on-location electronics troubleshooting

services provided by technicians **304**, as shown in FIG. 43 or to

add/remove or edit technician **304** schedules, as shown in FIG.

44.Referring to FIG. 5, preferably the owner/manager **301** will

login to the on-location services management software on the Web

Server **101** to perform a variety of management and administrative

activities as part of the owner/manager management step **511**. The

activities may preferably include queries and reports of on-

location electronics troubleshooting services rendered,

supervisor **302** and technician **304** schedules, reports of

dissatisfied customers **303** and other actions as may be required.

Examples of some preferred reports, which preferably may be any

type of graph or text report and which can be saved, emailed and

or printed, are:

- Average time it takes for a technician **304** to call back a

  customer **303** from the time the technician **304** received a work

  order request,

- Average time it takes for a technician **304** to arrive and start

  at the location of a customer **303** from the time the technician

  304 received the work order,

- Average time it takes for a technician **304** to end at the

  location of customer **303** location after performing the service

from the time the technician **304** received the work order,

- Average service cost per visit,

- Average time it takes for a technician **304** to start at the location of a customer **303** from the time the technician **304** called back the customer **303** to let them know help is on the way or that they have received the call from the customer **303**,

- Average time it takes for a technician **304** to end at the location of a customer **303** from the time the technician **304** called back the customer **303** to let them know help is on the way or that they have received the call from the customer **303**,

- Average time it takes for a technician **304** to complete a service visit,

- Average errors in attempting to process the credit card belonging to the customer **303** per given period of time or per quantity signed,

- Average times a customer **303** needed to change their credit card on the website because when service was completed, their credit card was denied per given period of time or per quantity signed up,

- Total or average amount of service requests per amount of people signed up or per given period of time,

- Average amount of calls in which the customer **303** would prefer to have the dispatcher at a given company dispatch their work

request, instead of the customer **303** doing it,

- Average amount of times a customer **303** prefers that a specific technician **304** receive their work per number signed up or per given period of time,

- Average amount of times, the customer **303** needs service and wants to be added to the system, so they can do it themselves next time per number signed up or per given period of time,

- Average amount of times, the customer **303** needs service and does not want to be added to the system per number signed up or per given period of time,

- Total or average amount of service requests per amount of employees,

- Total or average amount of service requests per given amount of time,

- Total or average amount of hours spent by any given internal group or multiple groups within a company maintaining the company (company's own internal operations) or outside the company per number signed up or per given period of time,

- Total and average start times for employees per number signed up or per given period of time,

- Total and average end times for employees per number signed up or per given period of time,

- Reports depicting tasks with internal tracking numbers, start

times, end times, outstanding problems, how a day could have been more productive, and comments for employees over time or a specified period of time,

* Graphs showing % time spent per given internal tracking number for an employee or multiple employees over time or a specified period of time,

* Reports depicting tasks, start times, end times and comments over time or a specified period of time, and

* Graphs showing % time spent per given task over time or a specified period of time (embodying herein computer interface and processor means for presenting text reports; and computer interface and processor means for presenting graphical reports).

As described above, each of the activities of customer **303** are facilitated by particular on-location services management software capabilities. The following screens and interrelationships describe a preferred embodiment of the customer interface software **202**.

Referring to FIG. 6, Customer Start Screen, the customer **303** preferably may select the text link which opens a browser which preferably displays the website or selects the Close button to close the entire application. Preferably, selecting the 24 Hour Help button will display the Note screen, FIG. 7.

Referring to FIG. 7, Note screen the customer **303** must

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select the OK button to continue the login process. Preferably,
after this button is clicked the dialog closes and the program
checks to see if the personal computer belonging to the customer
303 is connected to the Internet. If the personal computer is
connected to the Internet then preferably the Customer ID Login
screen, as illustrated in FIG. 8, will display. If the personal
computer is not connected to the Internet then Error: Internet
Connection screen, FIG. 18, will preferably display.

Referring to FIG. 8, Customer ID Login screen, preferably a
customer **303** must type in his or her personal customer ID number
and click the OK button to successfully login (embodying herein
computer interface means for inputting login identification
information by such at least one customer). The program then
preferably sends this request to the server and waits for a reply
for a specified period of time. During this time a progress bar
preferably continually updates. If the program does not receive
the reply within the specified period of time, then the Error:
Request Not Received screen, as illustrated in FIG. 16, is
preferably presented.

If the reply is received within the specified period of time
and the customer ID number was entered incorrectly then
preferably the Error: Login Failed screen, as shown in FIG 9, is
displayed (embodying herein computer processing means for
validating login identification information from such at least

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one customer).

If the customer **303** selects the Cancel button on the Login screen, FIG. 8, preferably all dialogs are closed and the Customer Start Screen, FIG. 6, is displayed.

Referring to FIG. 9, Error: Login Failed screen, preferably a customer **303** must type in his or her personal customer ID number again and click the OK button to successfully login. The program then preferably sends this request to the server and waits for a reply for a specified period of time. During this time a progress bar preferably continually updates. If the program does not receive the reply within the specified period of time then the Error: Request Not Received screen, as illustrated in FIG. 16, is preferably presented.

If the reply is received within the specified period of time and the customer ID number is incorrect then FIG. 9, the Error: Login Failed screen, is displayed again one last time. After the second incorrect customer ID number in this dialog, preferably the Notification screen, FIG. 10, is displayed telling the customer **303** their customer ID number will be emailed.

If the reply is received within the specified period of time and the customer ID number was entered correctly then preferably FIG. 11, the Confirm Account Information screen, will display.

Referring again to FIG. 9, preferably customer **303** may optionally click the Forgot Password button which will display

the Notification Screen as shown in FIG. 10 to receive the appropriate pin number by email.

Referring to FIG. 10, the Notification screen, upon presentation of this screen, preferably the customer **303** may only select the OK button which will preferably close all dialogs and return the customer **303** to the Customer Start screen, FIG. 6.

Referring to FIG. 11, the Confirm Account Information screen, the customer **303** may preferably select the either the Correct button which will preferably display the Contact Information screen, FIG. 13, or the Incorrect button which will preferably present the Incorrect Account Information screen, FIG. 12 (embodying herein computer interface means for receiving confirmation of accuracy of such customer information).

Referring to FIG. 12, the Incorrect Account Information screen, the customer **303** may preferably select either the Close button which closes all dialogs and displays the Customer Start Screen, FIG. 6, or select the text link which will preferably launch a browser window bringing the customer **303** to the website to update the account information.

Referring to FIG. 13, the Contact Information screen, preferably the customer **303** may enter a name, select a phone number, and select the 'OK' button (embodying herein computer interface and storage means for receiving contact information relating to such current at least one on-location electronics

troubleshooting request) which will display the Explain Problem screen, FIG. 14; or the customer **303** may select the Cancel button, which will preferable close all dialogs and display the Customer Start Screen, FIG. 6.

Referring to FIG. 14, the Explain Problem screen, the customer **303** may preferably enter a description of the problem in the available text box (embodying herein computer interface and storage means for receiving problem description relating to such current at least one on-location electronics troubleshooting request by such at least one customer) and select the 'Next' button which will preferably present the Process Request screen , FIG. 15, or may select the Cancel button which will preferably close all dialogs and display the Customer Start Screen, FIG. 6.

Referring to FIG. 15, Process Request, the customer **303** may preferably select the 'OK' button to send the request to the server and continually wait for a reply for a specified period of time. During this time the progress bar continually updates. If a reply is not received within the specified period of time, then preferably the Error: Request Not Received screen, FIG. 16, is displayed. If a reply is received within the specified period of time, the request has been received and stored in the database (embodying herein computer interface and storage means for receiving requests relating to such on-location electronics troubleshooting services from such at least one customer), then

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preferably the Confirmation screen, FIG. 17, is presented to the customer **303**. Alternatively, the customer **303** may select the Cancel button which will preferably close all dialogs and display the Customer Start Screen, FIG. 6.

Referring to FIG. 16, Error: Request Not Received screen, the customer **303** preferably may only select the OK button which preferably closes all dialogs and FIG. 6, the Customer Start screen is displayed.

Referring to FIG. 17, the Confirmation screen, preferably customer **303** may only select the OK button which preferably closes all dialogs and FIG. 6, and the Customer Start screen is displayed.

Referring to FIG. 18, the Error: Internet Connection screen, preferably the customer **303** may only select the OK button which preferably closes all dialogs and FIG. 6, and the Customer Start screen is displayed.

As described above, each of the activities of technician **304** are facilitated by particular on-location services management software capabilities. The following screens and interrelationships describe a preferred embodiment of the technician interface software **207**.

Referring to FIG. 19, the Technician Start screen, the technician **304** has five options when initiating access to the system.

Selecting the text link will preferably launch a browser window bringing the technician **304** to the website.

Selecting the Clock In button, the Clock Out button or the View (Work Schedule/Contact Information) button preferably will pop up the Note screen, as shown in FIG. 20 (embodying herein computer interface and storage means for receiving at least one work shift start request from such at least one technician).

Selecting the Close button will preferably close the entire application.

Referring to FIG. 20, the Note screen, the technician **304** must select the OK button to continue the login process. After this button is clicked, the dialog closes and the program checks to see if the personal computer belonging to the technician **304** is connected to the Internet. If the personal computer is connected to the Internet, then preferably the Login screen, as illustrated in FIG. 21 will pop up. If the personal computer belonging to the technician **304** is not connected to the Internet, then preferably the Error: Internet Connection screen, as shown in FIG. 29, will pop up.

Referring to FIG. 21, Technician Login ID, preferably a technician **304** must type in his or her personal technician ID number and click the OK button to successfully login. The program then preferably sends this request to the server and waits for a reply for a specified period of time. During this

time a progress bar preferably continually updates. If the

program does not receive the reply within the specified period of

time then the Error: Request Not Received screen, as illustrated

in FIG. 30, is preferably presented.

If the reply is received within the specified period of time

and the technician ID number was entered incorrectly, then

preferably the Error: Login Failed screen, as shown in FIG 22, is

displayed.

If the reply is received within the specified period of time

and the technician ID number was entered correctly, then

preferably one of five additional screens will be presented to

the technician **304** depending on the selection that was previously

made on the Technician Start screen, FIG. 19.

If the button originally clicked on the Technician Start

screen, FIG. 19, was Clock In, and it is currently within 15

minutes of the shift start time for the technician **304** through

the end of the shift time, the Shift Start screen, as shown in

FIG. 25 is preferably displayed after the Clock In time has been

preferably saved to the database (embodying herein computer

interface means for presenting confirmation of start of work

shift to such at least one technician). Alternatively, if it is

not within 15 minutes of the shift start time for the technician

304 through the end of the shift time, the Error: Start Shift,

screen as shown in FIG. 27, is preferably presented.

If the button originally clicked on the Technician Start screen, FIG. 19, was Clock Out, then preferably one of two possible outcomes will occur: if the technician **304** previously clocked in, preferably Shift End, as shown in FIG. 28, is displayed after saving the Clock Out time to the database (embodying herein computer interface and storage means for receiving at least one end of work shift request from such at least one technician); or, if the technician **304** has not previously clocked in, preferably Error: End Shift, FIG. 26, is presented to the technician **304**.

If the button originally clicked on the Technician Start screen, FIG. 19, was View, then preferably the Schedule and Contact Information screen, FIG. 24, is presented to the technician **304**.

If the technician **304** selects the Cancel button, preferably all dialogs are closed and the Technician Start screen, FIG. 19, is displayed.

Referring to FIG. 22, the Error: Login Failed screen, preferably a technician **304** must type in his or her personal technician ID number again and click the OK button to successfully login. The program then preferably sends this request to the server and waits for a reply for a specified period of time. During this time a progress bar preferably continually updates. If the program does not receive the reply

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within the specified period of time, then the Error: Request Not Received screen, as illustrated in FIG. 30, is preferably presented.

If the reply is received within the specified period of time and the technician ID number is incorrect, then FIG. 22, the Error: Login Failed screen, is displayed again one last time. After the second incorrect technician ID number in this dialog, preferably the Notification screen, FIG. 23, is displayed, telling the technician **304** that the technician's ID number will be emailed.

If the reply is received within the specified period of time and the technician ID number was entered correctly, then preferably one of five additional screens will be presented to the technician **304** depending on the selection that was previously made on the Technician Start screen, FIG. 19.

If the button originally clicked on the Technician Start screen, FIG. 19, was Clock In, and it is currently within 15 minutes of the shift start time for the technician **304** through the end of the shift time, the start time for the technician **304** is recorded and the Shift Start screen, as shown in FIG. 25, is preferably displayed. Alternatively, if it is not within 15 minutes of the shift start time for the technician **304** through the end of the shift time, the Error: Start Shift, screen, as shown in FIG. 27, is preferably presented.

If the button originally clicked on the Technician Start screen, FIG. 19, was Clock Out, then preferably one of two possible outcomes will occur: if the technician **304** previously clocked in, the actual shift end time of the technician **304** is recorded in the database (embodying herein computer interface means for presenting confirmation of end of work shift to such at least one technician) and preferably Shift End, as shown in FIG. 28, is displayed; or if the technician **304** has not previously clocked, preferably Error: End Shift, FIG. 26, is presented to the technician **304**.

If the button originally clicked on the Technician Start screen, FIG. 19, was View, then preferably the Schedule and Contact Information screen, FIG. 24, is presented to the technician **304**.

If the technician **304** selects the Cancel button, preferably all dialogs are closed and the Technician Start screen, FIG. 19, is displayed.

Referring to FIG. 23, the Notification screen, upon presentation of this screen preferably the technician **304** may only select the OK button, which will preferably close all dialogs and return the supervisor **302** to the technician **304** Start screen, FIG. 19.

Referring to FIG. 24, the Schedule & Contact Information screen, all technicians **304** have three choices. The technician

304 may preferably select the Print button in the Contact

Information pane to print all of the contact information, the

technician **304** may preferably select the Print button in the

Schedule pane to print the work shift schedule, or the technician

304 may preferably select the Close button which will preferably

close all dialogs and preferably display the Technician Start

screen, FIG. 19 (embodying herein computer interface means for

presenting planned shift scheduling to such at least one

technician).

Referring to FIG. 25, Shift Start screen, the technician **304**

may preferably only select the OK button, which preferably closes

all dialogs and displays the Technician Start screen, FIG. 19.

Referring to FIG. 26, Error: End Shift screen, the

technician **304** preferably may only select the OK button. This

preferably closes all dialogs and FIG. 19, the Technician Start

screen, is displayed.

Referring to FIG. 27, Error: Start Shift screen, the

technician **304** preferably may only select the OK button. This

preferably closes all dialogs and FIG. 19, the Technician Start

screen, is displayed.

Referring to FIG. 28, Shift End screen, the technician **304**

preferably may only select the OK button which closes all

dialogs, and FIG. 19, the Technician Start screen, is displayed.

Referring to FIG. 29, Error: Internet Connection screen, the

technician **304** preferably may only select the OK button. This preferably closes all dialogs and FIG. 19, the Technician Start screen, is displayed.

Referring to FIG. 30, Error: Request Not Received screen, the technician **304** preferably may only select the OK button. This preferably closes all dialogs and FIG. 19, the Technician Start screen is displayed.

As described above, each of the activities of supervisor **302** are facilitated by particular on-location services management software capabilities. The following screens and interrelationships describe a preferred embodiment of the supervisor interface software **204**.

Referring to FIG. 31, Supervisor Start screen, preferably, the supervisor **302** has various choices when initiating access to the system.

Selecting the text link preferably launches a browser window bringing the supervisor **302** to the website.

Selecting the Clock In button, the Clock Out button, the View (Work Schedule/Contact Information) button, the View (Reports) button, or the Change (Create/Modify Employee Schedule) button preferably will pop up the Note screen, as shown in FIG. 32.

Selecting the Close button will preferably close the entire application.

Referring to FIG. 32, Note screen, the supervisor **302** must select the OK button to continue the login process. After this button is clicked, the dialog closes and the program checks to see if the personal computer belonging to the supervisor **302** is connected to the Internet. If the personal computer is connected to the Internet, then preferably the Login screen, as illustrated in FIG. 33 will pop up. If the personal computer belonging to the supervisor **302** is not connected to the Internet, then preferably the Error: Internet Connection screen, as shown in FIG. 40, will pop up.

Referring to FIG. 33, the Supervisor Login screen, preferably a supervisor **302** must type in his or her personal supervisor ID number and click the OK button to successfully login. The program then preferably sends this request to the server and waits for a reply for a specified period of time. During this time a progress bar preferably continually updates. If the program does not receive the reply within the specified period of time then the Error: Request Not Received screen, as illustrated in FIG. 41, is preferably presented.

If the reply is received within the specified period of time and the supervisor ID number was entered incorrectly, then preferably the Error: Login Failed screen, as shown in FIG 34, is displayed.

If the reply is received within the specified period of time

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and the supervisor ID number was entered correctly, then preferably one of seven additional screens will be presented to the supervisor **302**, depending on the selection that was previously made on the Supervisor Start screen, FIG. 31.

If the button originally clicked was Clock In, and it is currently within 15 minutes of the shift start time for the supervisor **302** through the end of the shift time, the Shift Start screen, as shown in FIG. 36, is preferably displayed. Alternatively, if it is not within 15 minutes of the shift start time for the supervisor **302** time through the end of the shift time, the Error: Start Shift, screen, as shown in FIG. 38, is preferably presented.

If the button originally selected in FIG. 31, Supervisor Start screen, was Clock Out, then preferably one of two possible outcomes will occur: if the supervisor **302** previously clocked in, preferably Shift End, as shown in FIG. 39, is displayed; or if the supervisor **302** has not previously clocked in, preferably Error: End Shift, FIG. 37, is presented to the supervisor **302**.

If the button originally clicked in FIG. 31, Supervisor Start screen, was View (Work Schedule/Contact Information), then preferably FIG. 42, Schedule & Contact Information, is displayed to the supervisor **302**.

If the button originally clicked in FIG. 31, Supervisor Start screen, was View (Reports), then preferably Report, FIG.

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43, is presented.

If the button originally clicked in FIG. 31, Supervisor Start screen, was Change (Create/Modify Employee Schedule) then preferably FIG. 44, Schedule, is displayed.

If the supervisor **302** selects the Cancel button on the Login screen, FIG. 33, preferably all dialogs are closed and the Supervisor Start screen, FIG. 31, is displayed.

Referring to the Error: Login Failed screen, as illustrated by FIG. 34, preferably a supervisor **302** must type in his or her personal supervisor ID number again and click the OK button to successfully login. The program then preferably sends this request to the server and waits for a reply for a specified period of time. During this time a progress bar preferably continually updates. If the program does not receive the reply within the specified period of time then the Error: Request Not Received screen, as illustrated in FIG. 41, is preferably presented.

If the reply is received within the specified period of time and the supervisor ID number is incorrect, then FIG. 34, the Error: Login Failed screen, is displayed again one last time. After the second incorrect supervisor ID number in this dialog, preferably the Notification screen, FIG. 35, is displayed, telling the supervisor **302** that the supervisor's ID number will be emailed.

If the reply is received within the specified period of time and the supervisor ID number was entered correctly then preferably one of seven additional screens will be presented to the supervisor **302**, preferably depending on the selection that was previously made on the Supervisor Start screen, FIG. 31.

If the button originally clicked was Clock In, and it is currently within 15 minutes of the shift start time for the supervisor **302** through the end of the shift time, records the actual shift start time of the supervisor **302** is recorded in the database and the Shift Start screen, as shown in FIG. 36 is preferably displayed. Alternatively, if it is not within 15 minutes of the shift start time for the supervisor **302** through the end of the shift time, the Error: Start Shift, screen as shown in FIG. 38, is preferably presented.

If the button originally selected in FIG. 31, Supervisor Start screen, was Clock Out, then preferably one of two possible outcomes will occur: if the supervisor **302** previously clocked in, the actual shift end time of the supervisor **302** is recorded in the database and preferably Shift End, as shown in FIG. 39, is displayed; or if the supervisor **302** has not previously clocked in, preferably Error: End Shift, FIG. 37, is presented to the supervisor **302**.

If the button originally clicked in FIG. 31, Supervisor Start screen, was View (Work Schedule/Contact Information), then

preferably FIG. 42, Schedule & Contact Information, is displayed to the supervisor **302**.

If the button originally clicked in FIG. 31, Supervisor Start screen, was View (Reports), then preferably Report, FIG. 43, is presented.

If the button originally clicked in FIG. 31, Supervisor Start screen, was Change (Create/Modify Employee Schedule) then preferably FIG. 44, Schedule, is displayed.

If the supervisor **302** selects the Forgot Password button on the Error: Login Failed screen, FIG. 34, preferably all dialogs are closed and the Notification screen, FIG. 35, is displayed.

Referring to FIG. 35, the Notification screen, upon presentation of this screen, preferably the supervisor **302** may only select the OK button which will preferably close all dialogs and return the supervisor **302** to the Supervisor Start screen, FIG. 31.

Referring to FIG. 36, Shift Start screen, the supervisor **302** may only select the OK button. This preferably closes all other dialogs and returns the supervisor **302** to FIG. 31, the Supervisor Start screen.

Referring to FIG. 37, Error: End Shift screen, the supervisor **302** preferably may only select the OK button. This preferably closes all dialogs and FIG. 31, the Supervisor Start screen, is displayed.

Referring to FIG. 38, Error: Start Shift screen, the supervisor **302** preferably may only select the OK button. This preferably closes all dialogs and FIG. 31, the Supervisor Start screen, is displayed.

Referring to FIG. 39, Shift End screen, the supervisor **302** preferably may only select the OK button. This preferably closes all dialogs and FIG. 31, the Supervisor Start screen, is displayed.

Referring to FIG. 40, Error: Internet Connection screen, the supervisor **302** preferably may only select the OK button. This preferably closes all dialogs and FIG. 31, Supervisor Start screen, is displayed.

Referring to FIG. 41 Error: Request Not Received screen, the supervisor **302** preferably may only select the OK button. This preferably closes all dialogs and FIG. 31, Supervisor Start screen, is displayed.

Referring to FIG. 42, Schedule & Contact Information screen, all supervisors **302** preferably have three choices; and if he or she supervises more than one work cell, two additional options are preferably available. All supervisors **302** preferably have at least the following three choices.

The supervisor **302** may select the Print button in the Contact Information pane to preferably print all of the contact information for technician **304**. The supervisor **302** may select

the Print button in the Schedule pane to preferably print the entire schedule for technician **304**. The supervisor **302** may select the Close button to preferably close all dialogs and display FIG. 31, Supervisor Start screen.

For supervisors **302** responsible for only one work cell, everything in the Work Cell pane preferably will be unavailable, the Work cell preferably will still be displayed in the menu, the Redisplay Contact Information/Schedule button preferably will still be displayed, and the Status bar preferably will be displayed without any solid bars.

For supervisors **302** responsible for multiple work cells, selecting a Work Cell from the pull down menu list will preferably cause the specific cell to appear in the Work Cell pane; and preferably the Contact Information and Schedule are removed from the display. When a supervisor **302** selects the Redisplay Contact Information/Schedule button, the Contact Information and Schedule are removed from the display, all buttons and the entire display becomes grayed out and unavailable, and the program preferably sends this request to the server and continually waits for a reply for a specified period of time. During this time the progress bar preferably continually updates. If the program does not receive a reply within the specified period of time preferably, the Error: Request Not Received screen, FIG. 41, is displayed. If the

program does receive the reply within the specified period of time, preferably all buttons and pull down menus cease to become grayed out and become available, and the Contact Information and Schedule preferably are refreshed for that selected Work Cell.

Referring to FIG. 43, Feedback Report, all supervisors **302** preferably have five options. Selecting the Redisplay Report button preferably removes the Report from the display, and all buttons and the entire display preferably becomes grayed out and unavailable. The program preferably sends the report request to the server and preferably waits for a reply for a specified period of time. During this time the progress bar preferably continually updates. If the program does not receive the reply within the specified period of time, preferably the Error: Request Not Received screen, FIG. 41, is displayed. If the program does receive the reply within the specified period of time, preferably the Report is refreshed for that selected Work Cell, for the Start Date and End Date inclusive, and all buttons and pull down menus preferably become available.

Selecting the Close button will preferably close all dialogs and display the Supervisor Start screen, FIG. 31.

Selecting the Start Date from the pull down calendar preferably permits the selection of a desired date and the current Report is preferably removed from the display. Selecting the End Date from the pull down calendar preferably permits the

selection of a desired date, and the current Report is preferably removed from the display.

Supervisors responsible for only one work cell preferably will have no other options; and the work cell in the Choose Report Parameters pane preferably will be grayed out and unavailable, and the work cell will still be displayed in the menu.

Supervisors responsible for multiple work cells preferably have the additional ability to select a particular work cell from the pull down menu list. Preferably, after a selection has been made, that one specific work cell appears and the current Report is removed from the display. The supervisor **302** then preferably has all the options described above available for completing a desired report.

Referring to FIG. 44, Schedule, all supervisors **302** will have at least the following seven choices.

- Selecting a Shift from the Shift pull down menu list preferably permits Shift selection.
- Selecting a Date from the pull down calendar preferably permits Date selection.
- Selecting an Employee from the pull down menu list preferably permits Employee selection.
- Selecting the Add selection button in the Proposed Schedule pane preferably displays the Preview of Proposed

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schedule using the selected Shift, Date and Employee.

- Selecting the Remove selection button in the Proposed
  Schedule pane preferably displays requested removal in the
  Preview of Proposed schedule display using the selected
  Date, Shift and Employee.

- Selecting the Save to Server button preferably causes the
  buttons and the entire display to become grayed out and
  unavailable. The program then sends this request to the
  server and preferably waits for a reply for a specified
  period of time. During this time the progress bar
  preferably continually updates. If the program does not
  receive the reply within the specified period of time,
  then the Error: Request Not Received screen, FIG. 41, is
  preferably displayed. If the program does receive the
  reply within the specified period of time, preferably the
  entire display ceases to become grayed out and buttons
  become available and the schedule saved on the server is
  redisplayed in the Preview of Proposed Schedule pane.

- Selecting the Close button preferably closes all dialogs,
  and the Supervisor Start screen, FIG. 31, is displayed.

Supervisors **302** responsible for only one work cell have all
of the above options, but the Work Cell in the Change/Edit
Schedule pane will be grayed out and unavailable. Preferably the
cell will still be displayed in the menu.

For supervisors **302** responsible for multiple work cells, all of the above options are preferably available plus one additional option. Selecting a Work Cell from the pull down menu list preferably presents the selected cell, the current Report is preferably removed from the display, and all buttons and pull down menus preferably become grayed out and unavailable. The program preferably then sends this request to the server and continually waits for a reply for a specified period of time. During this time the progress bar continually updates. If the program does not receive the reply within the specified period of time, preferably the Error: Request Not Received screen, FIG. 41, is displayed. If the program does receive the reply within the specified period of time, preferably all buttons and pull down menus become available, and preferably the schedule saved on the server is redisplayed in the Preview of Proposed Schedule pane.

As described above, particular activities are facilitated by particular software available to customers **303**, technicians **304** and supervisors **302** through a browser connection to the on-location services management software on the Web Server **101**. The following screens and interrelationships describe a preferred embodiment of the website interface software **201**.

Referring to FIG. 45, the Home Page screen, a potential customer, supervisor **302**, customer **303**, or technician **304** may

preferably make one of five choices.

Preferably, selecting the "Interested in our service?" text link displays FIG. 46, the Interested in Our Service screen. Preferably, selecting the "Customer login" text link displays FIG. 48, the Customer login screen. Preferably, selecting the "Technician login" text link displays FIG. 52, the Technician login screen. Preferably, selecting the "Interested in becoming a technician?" text link displays FIG. 64, the Employment Interest screen. Preferably, selecting the "Supervisor login" text link preferably displays FIG. 65, the Supervisor Login screen.

Referring to FIG. 46, the Interested In Our Service screen, a potential customer **303** preferably fills out all of his/her contact information and selects the submit button. After clicking the submit button, FIG. 47, the Thanks, You will be contacted screen is preferably displayed.

Referring to FIG. 47, the Thanks, You will be contacted screen preferably displays a thank you message, and preferably the potential customer **303** is not prompted to take any further action.

Referring to FIG. 48, the Customer login screen, the customer **303** preferably enters his or her phone number and customer ID number and selects the submit button. If the phone number or customer ID number was incorrect, then the Customer

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Login Incorrect screen, FIG. 49, is preferably displayed. If the phone number and customer ID number were correct, then the Customer Logged In screen, FIG. 50, is preferably displayed

Referring to FIG. 49, the Customer Login Incorrect screen, the customer **303** enters his or her phone number and customer ID number and selects the submit button. If the phone number or customer ID was incorrect, then the Incorrect Login screen, FIG. 49, is preferably displayed again. If the phone number and customer ID are correct, then the Customer Logged In screen, FIG. 50, is preferably displayed.

Referring to FIG. 50, the Customer Logged In screen, the customer **303** may preferably select one of five choices. Selecting the 'Interested in adding service to another location' radio button and clicking the submit button will preferably display the Thanks, You will be contacted screen, FIG. 47. Selecting the 'Moving' radio button and clicking the submit button will preferably display the Thanks, You will be contacted screen, FIG. 47. Selecting the 'Moving service to another computer' radio button and clicking the submit button will preferably display the Thanks, You will be contacted screen, FIG. 47. Selecting the 'Modify billing info' radio button and clicking the submit button will preferably display the Modify billing information screen, FIG. 69. Selecting the 'Comments' radio button, completing his/her comments about the service, and

clicking the submit button will preferably display the Thanks Response screen, FIG. 51.

Referring to FIG. 51, the Thanks Response screen, a thank you for your response message is preferably displayed and the customer **303** is preferably not required to take any action.

Referring to FIG. 52, the Technician Login screen, the technician **304** preferably enters his or her phone number and technician ID number and clicks the submit button. If either the phone number or technician ID number was incorrect, then the Technician Login Incorrect screen, FIG. 53, is preferably displayed. If the phone number and technician ID number are correct, then the Technician Logged In screen, FIG. 54, is preferably displayed.

Referring to FIG. 53, the Technician Login Incorrect screen, the technician **304** preferably enters his or her phone number and technician ID number and selects the submit button. If either the phone number or technician ID number is incorrect, then the Technician Login Incorrect screen, FIG. 53, is preferably displayed again. If the phone number and technician ID number are correct, then the Technician Logged In screen, FIG. 54, is preferably displayed.

Referring to FIG. 54, the Technician Logged In screen, the technician **304** preferably may select one of two choices. Selecting the 'Complete work order' radio button and clicking the

submit button will preferably display the Complete work order
screen, FIG. 55. Selecting the 'Initial customer setup' radio
button will preferably display the Purchase Service screen, FIG.
61.

Referring to FIG. 55, the Complete Work Order screen,
preferably the technician **304** fills in the Work Order Number, the
Time in, the Time out, preferably selects either the "Yes" or
"No" radio button to indicate the customer **303** needs a contractor
to solve the problem the customer **303** has, and clicks the Submit
button.

If the Work Order Number entered has not been previously
recorded by the system, it is incorrect and preferably the
Incorrect Work Order screen, FIG. 56, is displayed. If the Work
Order Number is correct and the "Yes" radio button for "Does the
customer **303** need services from a contractor?" question was
selected, then the Find Contractor screen, FIG. 57, is preferably
displayed (embodying herein computer interface and storage means
for receiving indication of any need relating to repair service
from such selected at least one technician).

If the Work Order Number is correct and the "No" radio
button for "Does the customer need services from a contractor?"
question was selected, the information is saved to the database
(embodying herein computer interface and storage means for
recording on-location electronics troubleshooting service

information), then the Customer Satisfaction screen, FIG. 58, is preferably displayed (embodying herein computer interface and storage means for receiving start time of such on-location electronics troubleshooting service from such selected at least one technician; and embodying herein computer interface and storage means for receiving end time of such on-location electronics troubleshooting services from such selected at least one technician).

Referring to FIG. 56, the Incorrect Work Order screen, preferably the technician **304** fills in the Work Order Number, the Time in, the Time out, preferably selects either the "Yes" or "No" radio button to indicate the customer **303** needs a contractor to solve the problem the customer **303** has and clicks the Submit button.

If the Work Order Number entered has not been previously recorded by the system, then it is incorrect and preferably the Incorrect Work Order screen, FIG. 56, is displayed again.

If the Work Order Number is correct and the "Yes" radio button for "Does the customer need services from a contractor?" question was selected, then the Find Contractor screen, FIG. 57, is preferably displayed.

If the Work Order Number is correct and the "No" radio button for "Does the customer need services from a contractor?" question was selected, then the Customer Satisfaction screen,

FIG. 58, is preferably displayed

Referring to FIG. 57, the Find Contractor screen, preferably the technician **304** selects either the Commercial button or Residential button and then selects a contractor specialty from the drop down list and clicks the Submit button which preferably saves all the information in the database and displays the Customer Satisfaction screen, FIG. 58 (embodying herein computer interface and storage means for recording on-location electronics troubleshooting service information; and embodying herein computer interface and storage means for receiving indication of selected type of such repair service from such selected at least one technician).

Referring to FIG. 58, the Customer Satisfaction screen, preferably the customer **303** fills in his/her customer ID number and indicates his or her level of satisfaction by selecting either the "Completely Satisfied" radio button, the "Satisfied" radio button or the "Unsatisfied" radio button and clicks the Submit button (embodying herein computer interface and storage means for receiving customer satisfaction evaluation).

If the customer ID number entered was correct, then the Thanks screen, FIG. 60, is preferably displayed.

If the customer ID number entered was incorrect, then FIG. 59, the Customer Satisfaction Incorrect Customer Id screen is preferably displayed.

Referring to FIG. 59, the Customer Satisfaction Incorrect Customer Id screen, preferably the customer **303** fills in his/her customer ID number and indicates his or her level of satisfaction by selecting either the "Completely Satisfied" radio button, the "Satisfied" radio button or the "Unsatisfied" radio button and clicks the Submit button.

If the customer ID number entered was correct, then the Thanks screen, FIG. 60, is preferably displayed.

If the customer ID number entered was incorrect, then FIG. 59, the Customer Satisfaction Incorrect Customer Id screen is preferably displayed again.

Referring to FIG. 60, the Thanks Service screen, preferably presents a thank you message and preferably the customer **303** is not required to take any action.

Referring to FIG. 61, the Purchase Service screen, preferably the customer **303** fills in Name, Address, City, State, Zip, Phone, Email, Credit Card Number, and Expiration and clicks the submit button.

Preferably, if the customer's **303** credit card information was accepted, then the information is saved and then the Download screen, FIG. 62 is preferably displayed (embodying herein computer interface and storage means for registering customer data relating to at least one customer; (embodying herein database means for maintaining a database of such customer data

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relating to such at least one customer).

Preferably, if the credit card belonging to the customer **303** was not accepted, then the Re-Enter Credit Card Information screen, FIG. 63, is preferably displayed.

Referring to FIG. 62, the Download screen, preferably the technician **304** selects the Download Software text link to begin the customer interface software **202** download to the personal computer belonging to the customer **303** and preferably activates the downloaded customer interface software **202**.

Referring to FIG. 63, the Re-Enter Credit Card Information screen, preferably the customer **303** fills in Name, Address, City, State, Zip, Phone, Email, Credit Card Number, and Expiration and clicks the submit button.

Preferably, if the customer's **303** credit card information was accepted, then the Download screen, FIG. 62 is preferably displayed.

Preferably, if the credit card belonging to the customer **303** was not accepted, then the Re-Enter Credit Card Information screen, FIG. 63, is preferably displayed again.

Referring to FIG. 64, the Employment Interest screen, preferably the potential employee fills in Name, Address, City, State, Zip, Phone, Email and skills and clicks the Submit button; then the Thanks you will be contacted screen, FIG. 47, is preferably displayed.

Referring to FIG. 65, the Supervisor Login screen, preferably the supervisor **302** enters his or her phone number and supervisor ID number and clicks the Submit button.

If either the phone number or supervisor ID number is incorrect, then the Supervisor Login Incorrect screen, FIG. 66, is preferably displayed.

If the phone number and supervisor ID number are correct, then the Create Employee Account screen, FIG. 67, is preferably displayed.

Referring to FIG. 66, the Supervisor Login Incorrect screen, preferably the supervisor **302** enters his or her phone number and supervisor ID number and clicks the Submit button.

If the either phone number or supervisor ID number is incorrect, then the Supervisor Login Incorrect screen, FIG. 66, is preferably displayed again.

If the phone number and supervisor ID number are correct, then the Create Employee Account screen, FIG. 67, is preferably displayed.

Referring to FIG. 67, the Create Employee Account screen, preferably the new employee fills in Name, Address, City, State, Zip, Cell Phone, Home Phone, Pager, Email and clicks the Submit button, the information is saved and the Download Employee Software screen, FIG. 68, is preferably displayed (embodying herein computer interface and storage means for registering

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technician data relating to at least one technician having

electronics-technician abilities relating to providing such on-

location electronics troubleshooting services; and (embodying

herein database means for maintaining a database of the

technician data relating to such at least one technician).

Referring to FIG. 68, the Download Employee Software screen,

preferably the supervisor **302** selects the Download Software text

link on the employee's personal computer to download the

technician interface software **207** and preferably activates the

technician interface software **207**.

Referring to FIG. 69, the Modify Billing Information screen,

preferably the customer **303** fills in Name, Address, City, State,

Zip, Primary Phone Number, Secondary Phone Number, Email address,

Credit Card Number, Expiration, and clicks the submit button,

which preferably displays the Billing Information Changed screen,

FIG. 70.

Referring to FIG. 70, the Billing Information Changed

screen, preferably a thank you message and confirmation of

updated information is displayed. Preferably, the customer **303**

is not prompted to do anything.

Referring now to FIG. 71, there is presented a schematic

overview of the business functions which may be preferably

conducted using a standard telephone or cellular telephone as an

alternative preferred embodiment of the present invention.

First, a customer **303** may preferably use a telephone, as illustrated by the services request step **521**, to place a call which is preferably answered by telephone interface **209** particularly programmed to collect the customer ID (account) number and pin number from the customer **303** and to subsequently store the information for later transfer to the on-location services management software on the Web Server **101**. All the necessary validations and edits are performed by the telephone interface **209** to ensure validity of the information entered by the customer **303**.

Second, after receiving an on-location electronics troubleshooting service request the telephone interface **209** creates and sends an on-location electronics troubleshooting service request email containing the customer id and pin number to the on-location services management software on the Web Server **101**. Preferably, when an on-location electronics troubleshooting service request is received and recorded in the database, the on-location services management software will automatically initiate a dispatch message to a technician **304** using the methods described above in the technician dispatch step **422** in FIG. 4. Preferably, when the telephone interface **209** receives technician **304** start or end shift times, a technician **304** start time email or technician **304** end time email is sent to the on-location

services management software on the Web Server **101** and recorded automatically as if the technician **304** had entered the information as described in the technician schedule step **532** shown in FIG. 5. Preferably, the telephone interface **209** receives supervisor **302** start or end shift times, a supervisor **302** start time email or supervisor **302** end time email is sent to the on-location services management software on the Web Server **101** and recorded automatically as if the supervisor **302** had entered the information as described in the supervisor schedule step **542** shown in FIG. 5.

Third, as shown in on-location services step **604**, preferably after completion of the on-location electronics troubleshooting services the technician **304** will initiate a telephone call to the telephone interface **209** to record the completion of the service call, record whether there is a need for repair services, and record the satisfaction level of the customer **303**. All the necessary validations and edits are performed by the telephone interface **209** to ensure validity of the information entered by the technician **304**.

Fourth, as shown in the telephone technician shift start and end step **605**, the technician **304** calls into the telephone interface **209**, enters his or her technician ID number and indicates whether this is the start of the shift or the end of

the shift. The telephone interface **209** then sends a technician **304** start shift email or a technician **304** end shift email to the on-location services management software on the Web Server **101**. All the necessary validations and edits are performed by the telephone interface **209** to ensure validity of the information entered by the technician **304**.

Fifth, as shown in the telephone supervisor shift start and end step **606**, the supervisor **302** calls into the telephone interface **209**, enters his or her supervisor ID number, and indicates whether this is the start of the shift or the end of the shift. The telephone interface **209** then sends a supervisor **302** start shift email or a supervisor **302** end shift email to the on-location services management software on the Web Server **101**. All the necessary validations and edits are performed by the telephone interface **209** to ensure validity of the information entered by the supervisor **302**.

Although the illustrated overview is one preferred embodiment, one skilled in the art will appreciate that, under appropriate circumstances, various sections may be omitted, rearranged or adapted in various ways for various purposes.

Referring now to FIG. 72, an additional preferred embodiment of the present invention is illustrated in which a customer **303** may purchase a desired piece of low-voltage electronic equipment from electronics equipment suppliers **307** that have been selected for their product line and delivery standards.

In the electronics equipment supplier agreement step **711**, preferably the owner/manager **301** will identify particular electronics equipment suppliers **307** who provide appropriate types and brands of low-voltage electronics, who are willing to provide very rapid delivery to customers **303**, and who will preferably pay a commission based on the value of the products sold to customers **303**.

In the electronics equipment supplier maintenance step **712**, the owner/manager **301** will preferably add a hyperlink to the electronics equipment supplier web server **203** once an agreement is completed with an electronics equipment supplier **307**. The hyperlink will allow customers **303** to access the electronics equipment supplier web site **203** selected by the customers **303**.

In the electronics equipment purchase step **701**, a customer **303** will select the desired item and arrange payment through the electronics equipment supplier web site **203**. In turn, the electronics equipment supplier **307** will schedule delivery of the purchased equipment directly with the customer **303**, as shown in

the electronics equipment delivery step **704**. Periodically, each

electronics equipment suppliers **307** will remit to the

owner/manager **301** commissions for electronics equipment purchased

by customer **303** coming to the electronics equipment supplier web

site **203** from the on-location services management software

operating on the Web Server **101**, as depicted in the payment step

713.

If desired, a customer **303** may request on-location services

to assist with the implementation of the purchased electronics

equipment using the same steps as depicted in FIG 4, of services

request step **421**, the technician dispatch step **422** and problem

resolution **423**.

Referring now to FIG. 73, a schematic overview of an

alternate preferred embodiment of the primary business functions

of the present invention is shown.

In a preferred embodiment of the present invention, in the

initial contact step **311**, a customer **303** learns of the on-.

location electronics troubleshooting services from advertising

and other marketing activities and preferably expresses an

interest in the services through the Web Site Home Page, FIG. 45,

Interested in Our Service screen, FIG. 46, and the Thanks, You

will be contacted screen, FIG. 47. Preferably, in customer

contact step **321**, the Licensee **801** contacts the customer **303**

using one or more typical methods; and preferably the customer 303 agrees to subscribe to the on-location electronics troubleshooting services for a period of at least one year and preferably agrees to pay the agreed monthly fee via an automatic monthly charge to a credit card belonging to the customer 303. According to an alternate preferred embodiment of the present invention, customer 303 pays an initial setup fee and a "per incident" fee each time the customer requests service. Upon reading the teachings of this specification, those with ordinary skill in the art will now understand that, under appropriate circumstances, considering issues such as business and marketing strategy, types of clients, type of service being provided by licensee, etc., other payment arrangements may suffice, such as, for example, eliminating the initial setup fee, prepaying for services, paying an annual fee, etc.

Preferably, Licensee 801 pays licensing fees to Licensor 802, as indicated by step 803, in exchange for a license to use the software and/or business methods of licensor 802, as indicated by step 804. Preferably, licensee 801 pays an initial licensing fee, followed by periodic licensing fees (preferably paid monthly) as indicated by step 803. Preferably, at least a portion of the licensing fees are based on the number of technicians 304 employed by licensee 801. Upon reading the teachings of this specification, those with ordinary skill in the

art will now understand that, under appropriate circumstances,

considering issues such as business and marketing strategy, types

of clients, type of service being provided by licensor, etc.,

other licensing arrangements may suffice, such as, for example, a

fixed one-time licensing fee, annual licensing fees, licensing

fees based on the number of customers **303**, licensing fees based

on geographic region or some other pertinent factor, etc.

In a preferred embodiment of the present invention, once a

potential customer **303** has agreed to subscribe to the on-location

electronics troubleshooting services as indicated by step **311**, a

technician **304** will be dispatched to the home or place of

business of the potential customer **303** as indicated by step **323**.

Preferably, once the technician **304** is at the service location of

the customer **303**, he or she will complete the customer sign up

step **322** by logging to the on-location services management

software operating on the Web Server **101**, as shown in FIG. 45,

FIG. 52, FIG. 53 and FIG. 54; and the customer **303** will

preferably enter his or her name and address and contact

information and credit card information, as illustrated in FIG.

61 and FIG. 62 (embodying herein computer interface and storage

means for registering customer data relating at least one

customer). After entry and acceptance of the credit card

information, as indicated by step **351**, step **352** and step **353**, the

customer information is stored in the database (embodying herein

database means for maintaining a database of such customer data

for such at least one customer; and (embodying herein computer

interface and storage means for receiving credit card account

information from such at least one customer), and the customer

interface software **202** is downloaded from the Web Server **101** and

installed on a personal computer which is, or can be, connected

to the Internet **107**, as shown in FIG. 3. Preferably, the

technician **304** instructs the customer **303** on the usage of the

customer interface software **202** (see FIG. 2).

Preferably, when customer **303** needs assistance, customer **303**

submits a request for service (preferably via website **101** as

indicated by step **311** or via telephone call to licensee as

indicated by step **321**). Preferably, technicians **304** are then

notified, as indicated by step **322**, to assist the customer **303**,

as indicated by step **323**. Preferably, technicians **304** provide

service trouble-shooting, assisting, and maintaining low voltage

equipment, such as, for example, computer networking audio/visual

equipment, communications systems, security systems, Internet

connectivity, etc. Upon reading the teachings of this

specification, those with ordinary skill in the art will now

understand that, under appropriate circumstances, considering

issues such as business and marketing strategy, types of clients,

type of service being provided by licensor, etc., having

technicians provide other services may suffice, such as, for

example, repairing other types of equipment, janitorial services, etc. Further, upon reading the teachings of this specification, those with ordinary skill in the art will now understand that, under appropriate circumstances, considering issues such as business and marketing strategy, types of clients, type of service being provided by licensor, etc., using customer interface software for uses other than dispatching technicians may suffice, such as, for example, to make requests to customer service representatives, place orders at restaurants, and other situations in which a request for service can benefit from automated selection and dispatch of available resources to provide the requested service, etc.

Referring again to FIG. 73, in the arrange for credit card processing step **351**, the licensee **801** will preferably conclude an agreement with appropriate credit card processing companies **305** to permit verification of customer **303** credit cards, the processing of credit card payment requests and automatic deposit of the payments to a specified bank account on behalf of the licensee **801**. In the request payment step **352**, each month the on-location services management software will preferably automatically create a payment request for each customer **303** and transmit it to the credit card processing company **305** for payment to the licensee **801**. Alternatively, customer **303** may alternatively chooses to pay on a per visit basis using a credit

card at the time of completion of the on-location services. Preferably, the technician **304** will enter the necessary credit card information in the **322** step which is preferably followed by the request payment step **352**. In the receive payments step **353**, the licensee **801** preferably receives the payments from customer **303** (embodying herein computer processor means for managing collecting at least one fee from such at least one customer relating to such on-location electronics troubleshooting services; and embodying herein computer processor and communications means for requesting such at least one payment from such at least one credit card account on behalf of such at least one customer substantially automatically at pre-determined intervals; and computer processor and communications means for requesting such at least one payment from such at least one credit card account on behalf of such at least one customer at completion of on-location electronics troubleshooting services by such at least one technician; and embodying herein computer processor means for recording such payment on behalf of such at least one customer).

Referring now to FIG. 74, which presents an overview of how the invention may, under appropriate circumstances, suffice to provide a variety of benefits and be implemented to solve many different problems in different service and management environments. According to an alternate preferred embodiment of

the present invention, the "customers" may be hotel guests, building tenants, services customers, or internal employees of a company as represented by service requestor **807**. Preferably, licensee **801** manages website **101** as indicated by step **806**. Preferably, service requestor **807** makes service requests via website **101** or telephone as indicated by step **311**. Preferably, website software contacts service provider **808** as indicated by step **322** by telephone and/or by an Internet interface. Preferably, service provider **808** assists service requestor **807** as indicated by step **323**. Preferably, licensee **801** pays license fees to licensor **802**, as indicated by step **803**, in exchange for the license, as indicated by **804**. Preferably, license fees are determined in various ways including level of usage as measured by the number of service requests managed, the number of service providers managed, the number of employees or some similar method.

With respect to providing hotel services to hotel guests, preferably the invention may be implemented to accept requests for toiletries, food, etc. via a user-interface on a personal computer in each room and/or have the guest call an internal or a 1-800 number to register their request. Preferably the request gets processed through the software and the appropriate service provider receives the message through a phone/pager and addresses the guest's needs without additional human intervention. Thus

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services to the guests are improved, workloads reduced and analysis of the types of requests and levels of service is provided through improved reporting.

With respect to services provided through call centers, such as AT&T for example. Preferably, customers would utilize the software installed on their computers or call a 1-800 number to initiate a question or request. Preferably, in turn the invention would identify the appropriate customer service representative in the call center, based on the nature of the request, who would then call the customer back. The customer receives improved service, get the problem solved and the company may potentially reduce staffing levels and better track and manage requests from start to closure.

With respect to Information Technology (IT) departments, preferably the invention may be used to accept, dispatch and manage technical requests for support and service from internal employees. Preferably an internal employee requiring assistance would utilize the software installed on their computers or call a 1-800 number to initiate a request. Preferably, in turn the invention would identify the appropriate IT support representative, based on the nature of the request, who would then provide the service to the requesting internal employee. The internal employees would get their problem solved more quickly and the company may potentially reduce staffing levels

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and better track and manage requests from start to closure.

With respect to building managers for large buildings, preferably the invention may be used to accept, dispatch and manage all manner of requests for support and services from building tenants. Preferably tenants requiring assistance would utilize the software installed on their computers or call a 1-800 number to initiate a request. Preferably, in turn the invention would identify the employee or trades contractor, based on the nature of the request, who would then provide the service to the requesting tenant. Tenants would get their problems solved more quickly and the building manager may potentially reduce staffing levels minimize trades contractor charges and better track and manage requests from start to closure.

With respect to employee scheduling and timekeeping, preferably the invention may be utilized to permit employees working away from the office, or in the office, to schedule their time and clocked in and out. Preferably, employees may be required to logon when a shift starts and log out when it ends using the invention. Preferably, this can be accomplished through software user interface on a personal computer or by calling a 1-800 number. Preferably, this use of the invention can eliminate a very manual and tedious process and problems with lying about hours worked, having employees clock in before a shift starts, clocking out before a shift ends, not properly adding up hours

worked in a week by a given employee, not having a supervisor know when his/her employees are on/off the clock, etc.

Although the illustrated overviews provide at least one preferred embodiment, those skilled in the art will appreciate that, under appropriate circumstances, various sections may be omitted, rearranged or adapted in various ways for various purposes.

Upon reading this specification, those skilled in the art will see that, considering similarities, differences and advantages, under appropriate circumstances as a non-preferred embodiment, the methods described herein may be applied to a variety of on-location services other than low-voltage electronics troubleshooting.

Although applicant has described applicant's preferred embodiments of this invention, it will be understood that the broadest scope of this invention includes such modifications as diverse shapes and sizes and materials. Such scope is limited only by the below claims as read in connection with the above specification.

Further, many other advantages of applicant's invention will be apparent to those skilled in the art from the above descriptions and the below claims.